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MEDICATION IN THE MANAGEMENT OF SLEEP DISORDERS IN CHILDREN WITH ADHD AND ASD: A BIBLIOGRAPHIC ANALYSIS

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Abstract: Sleep is a fundamental pillar for neurological and cognitive development in children. In children with Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD), sleep dysregulation is a frequent and debilitating comorbidity, manifesting as restless, fragmented and non-restorative sleep. This dysregulation directly impacts daytime functioning, exacerbating the core symptoms of ADHD and ASD. This article explores drug intervention as an auxiliary tool in the management of these sleep difficulties, analyzing the main drugs used, their mechanisms of action in the brain and the evidence of their efficacy and safety in pediatric populations with ADHD and ASD. The bibliographic analysis seeks to provide an in-depth understanding of how medication can contribute to improving sleep quality and, consequently, the quality of life of these children.
Keywords: ADHD, ASD, Sleep Disorders, Pharmacotherapy, Children, Methylphenidate, Atomoxetine, Melatonin, Risperidone.

INTRODUCTION

We know that a good night's sleep works miracles, right? And for children, this is even more essential. Sleeping well is essential for them to grow up strong, with a sharp mind and their emotions in order. It's while they sleep that they retain what they've learned, organize their feelings and recharge their batteries to pay attention and plan for the next day. However, for children with neurodevelopmental conditions such as ADHD and Autism Spectrum Disorder (ASD), getting a good night's sleep can be quite a challenge. It's much more common for them to have trouble sleeping than neurotypical children. We've seen this in various studies and it's a point that needs a lot of attention. That's why understanding and taking care of these children's sleep is so important. After all, a good night's sleep is not just a luxury, but a necessity for their well-being and development (Autismo e Realidade, 2024; Fernanda Mappa Psiquiatria Infantil, 2020).

Children with ADHD often have difficulties initiating sleep, fragmented sleep, nocturnal awakenings and daytime sleepiness (Ministry of Health, 2022). These alterations may be intrinsic to ADHD, related to dysfunctions in the neurotransmitter systems that regulate the sleep-wake cycle, or they may be aggravated by comorbidities such as anxiety and other psychiatric conditions.

Similarly, children with ASD exhibit a high rate of sleep disorders, including initial and maintenance insomnia, early awakening and altered circadian rhythms (Genial Care, 2024; Instituto Singular). These difficulties are believed to be related to dysfunctions in melatonin production, sensory hypersensitivity and behavioral patterns specific to ASD (Ocean Drop, 2025; Instituto Singular).

It is essential to understand that sleep problems in children with ADHD and ASD go far beyond a simple annoyance. In fact, they can worsen symptoms that the child already has during the day, such as learning difficulties, mood swings and even behavior. And, of course, this ends up affecting the dynamics of the whole family (Genial Care, 2024; Ministry of Health, 2022). To deal with this, the first approach is usually through non-drug measures, such as creating a healthy sleep routine and, in some cases, even cognitive-behavioral therapy. However, when these strategies are not enough, medication can become a crucial support for the child to finally get a truly restorative night's sleep.

This article aims to provide a bibliographical analysis of the use of medication in the management of sleep disorders in children with ADHD and ASD, explaining their mechanisms of action and the context in which they are applied.

DEVELOPMENT

The therapeutic approach to sleep disorders in children with ADHD and ASD must be individualized and take into account the severity of the symptoms, the presence of comorbidities and the response to non-pharmacological interventions. Medication, when indicated, aims to modulate neurotransmitter systems and the circadian cycle to promote more regular and restorative sleep.

ADHD MEDICATION AND SLEEP

It's worth remembering that some of the main ADHD medications, especially stimulants, can even disrupt sleep at the start of treatment because of their "plugging the child in" effect. However, for some children, these same drugs can even help them sleep better, but in an indirect way because by controlling agitation and impulsivity, they end up facilitating rest. Therefore, the choice of medication and the time at which it is administered make all the difference in this process.

The main drugs used to treat ADHD and their potential effects or mechanisms of action on sleep include:

Stimulants (Methylphenidate and Amphetamines):

Mechanism of Action: They act by increasing the levels of dopamine and norepinephrine (noradrenaline) in brain synapses (Clínica Regenerati, 2025; Afya Educação Médica). These substances are crucial for regulating attention, concentration and impulse control.

Relationship with sleep: It may sound strange, but even though these drugs are stimulants, they can actually help children sleep better. The key is the right dose at the right time (usually in the morning and early afternoon). By reducing agitation and impulsiveness during the day, children can get to bed calmer and better prepared to rest. However, if the medicine is taken too late or at a high dose, the effect can be the opposite: insomnia. This is why extended-release versions can be useful for keeping symptoms under control during the day and at night, but the timing of the last dose still requires attention.

Insomnia is a common side effect and needs to be monitored closely. It may be necessary to adjust the dose, change the schedule or even include a medication to help with sleep. It's a process of trial and error as each child is unique and talking to the doctor is fundamental to finding the best path for the child.

NON-STIMULANTS (ATOMOXETINE, GUANFACINE, CLONIDINE):

Atomoxetine:

Mechanism of Action: It is a selective norepinephrine reuptake inhibitor (SNRI) (BERNARDES, 2024). It increases norepinephrine levels in the brain, thus improving attention and impulse control.

Relationship with sleep: Unlike stimulants, atomoxetine generally has a side-effect profile that includes a lower risk of insomnia, and may even have a neutral or mildly sedative effect in some individuals. As it is not a stimulant, it may be an option for children who cannot tolerate stimulants due to sleep problems (BERNARDES, 2024).

ALPHA-ADRENERGIC AGONISTS (GUANFACINE, CLONIDINE):

Mechanism of Action: These drugs act on the alpha-2 adrenergic receptors in the brain, which are like the "switches" that control alertness and sleep.

Relation to Sleep: They are often used in children with ADHD who also have tics, more aggressive behavior or sleep problems. As they usually have a calming effect, they are often given at night to help the child fall asleep and also reduce the hyperactivity and impulsivity that get in the way at bedtime.

MEDICATION FOR ASD AND SLEEP

For children on the autistic spectrum, sleep problems can have various causes, from issues with the way the brain works itself to daily habits. For this reason, melatonin supplementation is one of the most studied and used options.

Melatonin:

Mechanism of **Action:** Melatonin is a hormone that our body produces naturally, in the pineal gland, and which plays a crucial role when it comes to organizing our biological clock, i.e. the cycle of sleep and wakefulness. In many children with ASD, we notice that the production of this hormone may be lower or not working at the right pace, which makes it difficult to fall asleep (Ocean Drop, 2025; Instituto Singular).

Relationship with sleep: Supplementing with exogenous melatonin helps signal to the brain that it's time to sleep, making it easier to induce sleep and improving its continuity (Ocean Drop, 2025; Instituto Singular). Studies show that melatonin can reduce the time it takes to fall asleep, increase total sleep duration and reduce nocturnal awakenings in children with ASD (Ocean Drop, 2025). It is usually administered 30 to 60 minutes before bedtime.

Melatonin is considered a **safe** option, with very few side effects in doses for children. The dosage and timing of administration need to be **adjusted on a case-by-case** basis, always under the supervision of a doctor.

ATYPICAL ANTIPSYCHOTICS (E.G. RISPERIDONE):

Mechanism of Action: They act by blocking dopamine and serotonin receptors in the brain (Autism and Reality, 2019). Although they are not primarily sleep medications, they are used in ASD to manage challenging behavior, irritability, aggression and severe hyperactivity (Genial Care, 2024).

Relationship with sleep: A common side effect of these antipsychotics is their sedative effect. For this reason, in cases of autism where sleep problems are very severe and the child exhibits behaviors that prevent them from sleeping, improving these behaviors with the use of these drugs can indirectly help the child have a more restful and quality night's sleep (Autism and Reality, 2019).

Considerations: The use of sleep medication in children with ASD is usually reserved for more severe cases, in which other treatments have not been successful and there are important behavioral comorbidities, due to possible metabolic side effects and other risks.

OTHER MEDICATIONS (ADDITIONAL CONSIDERATIONS):

Antihistamines: Although commonly used for sedation in adults, their efficacy and safety in children with ASD for sleep disorders is limited and their use should be cautious due to possible paradoxical effects and other side effects (MAPPA, F., Child Psychiatry, 2020).

Benzodiazepines: When it comes to the sleep of children with ASD, the use of benzodiazepines is not recommended. There are no strong studies to support this practice, and doctors generally avoid this class of medication due to the risk of creating dependency and other side effects that are not good for the little ones (MAPPA, F., Child Psychiatry, 2020).

CONCLUSION

Sleep problems are very common and affect children with ADHD and autism excessively, aggravating the symptoms they already have and reducing their quality of life. To help, it is necessary to have an approach that combines various strategies, and often, the use of medication ends up being an important part of the treatment, especially when the other alternatives don't work.

For children with ADHD, careful adjustment of stimulants or the use of non-stimulants such as atomoxetine or alpha-adrenergic agonists can not only control the symptoms of ADHD, but also, in certain contexts, improve sleep, either through a direct sedative effect or by reducing hyperactivity and impulsivity.

As for autism, melatonin is the main partner when it comes to insomnia, as it acts directly on the child's biological clock. In more severe cases, with very challenging behavior, atypical antipsychotics can be an option, and a better night's sleep is an added benefit.

It is imperative that the decision on the use of medication is made by specialized health professionals (neuropediatricians, child psychiatrists), in collaboration with the family, considering the risks and benefits of each drug. Understanding the mechanisms of action of these medications in the brains of children with ADHD and ASD is fundamental to optimizing treatment and promoting more restful sleep, which is essential for the healthy development and general well-being of these children. Future research is needed to deepen our understanding of the neurobiology of sleep disorders in these populations and to develop even more effective and individualized therapeutic approaches.

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