The Prevalence Of Sleep Disturbances In Children With Autistic Spectrum Disorders (ASD)

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Abstract
Sleep disturbances are frequently observed in children with pervasive developmental disorder (ASD) (Hosino et al., 1984; Richdale, 1999; Segawa, 1982). The form that the disturbance takes can be difficulty in both falling asleep and remaining asleep. Objective: To determine the prevalence of sleep disturbances in the children diagnosed with autistic spectrum disorders. Methods: 56 patients sample aged 3-7 years with ASD (DSM IV criteria) admitted in the "Al. Obregia" Hospital, Child and Adolescent Psychiatry Department, Bucharest, Romania. Data were statistical processed. Results, Conclusion: 1 out of every 4 children diagnosed with an autistic spectrum disorder presents with a sleep problem. The results suggest that both insomnias and parasomnias are the common sleep problems seen in these children, insomnias being more frequently encountered than parasomnias.

Key words: autistic spectrum disorder, sleep disturbances, parasomnia, insomnia.

Reports have recurrently been made about the high rate of sleep problems observed especially by parents, in children diagnosed with an autistic spectrum disorder. The most frequently reported sleep issues are the difficulty in initiating and maintaining sleep at appropriate times of the night and day. For a better understanding of the relationship between sleep problems and ASD, a brief overview of the "Autistic Spectrum Disorders" (ASD) is no doubt important.

WHAT ARE AUTISTIC SPECTRUM DISORDERS?
The "Autistic Spectrum Disorders" (ASDs) are a group of neurodevelopmental syndromes characterized by disturbances in social interactions, language and communication, and the presence of stereotyped behaviors and interests. Diagnoses include:

- **Autistic disorder**
- **Asperger's disorder:** is the autistic spectrum disorder (ASD) in which there is no general delay in language or cognitive development. Like the more severe ASDs, it is characterized by difficulties in social interaction and restricted, stereotyped patterns of behavior and interests. Although not mentioned in standard diagnostic criteria for AS, physical clumsiness and atypical use of language are frequently reported.
- **Rett's disorder:** is a childhood neurodevelopmental disorder characterized by normal early development followed by loss of purposeful use of the hands, distinctive hand movements, slowed head growth, gait abnormalities, seizures, and mental retardation. It affects females almost exclusively.
- **Childhood disintegrative disorder (CDD):** is a developmental disorder that resembles autism. It is characterized by at least two years of normal development, followed by loss of language, social skills,
and motor skills before age ten. Other names for childhood disintegrative disorder are Heller's syndrome, dementia infantilis, and disintegrative psychosis.

- **Atypical Autism**: is a condition in which some, but not all of the features of autism or another Pervasive Developmental Disorder are identified.

**SLEEP DISTURBANCES**

It is important to note that sleep problems are not part of the diagnostic criteria for autism, although these problems are a common clinical feature in children with the disorder. There is evidence that most children with autism are affected by difficulties with sleep (Arbell & Ben-Zion, 2001; Didden & Sigafoos, 2001; Richdale, 1999; Schreck & Mulick, 2000; Sweeney, Hoffman, Ashwal, Downey, & Stolz, 2003), that the problems occur at all levels of intellectual ability for these children (Richdale & Prior, 1995), and that they suffer from sleep problems as much as or more than children with other disabilities (Richdale, 1999).

The sleep disorders according to the DSM-IV nomenclature and nosology, may be divided into four major groups:

I. The **dyssomnias**: characterized by abnormalities in the quantity, quality or timing of sleep. They are a broad classification of sleeping disorder that makes it difficult to get to sleep, or to stay sleeping. Dyssomnias include: insomnia; (Insomnia is characterized by persistent difficulty falling asleep or staying asleep despite the opportunity. It is typically followed by functional impairment while awake); sleep apnea; narcolepsy; restless legs syndrome; periodic limb movement disorder; hypersomnia, delayed sleep phase syndrome; advanced sleep phase syndrome and more. There are over 30 recognized kinds of dyssomnias.

II. The **parasomnias**: which consist of experiences a child, may have during sleep that are directly related to the sleep process and sleep stages. It involves an abnormal disruption of sleep, such as sleep walking, sleep talking, nightmares, sleep apnea or nighttime seizures.

III. Sleep disturbances that frequently accompany the common major child psychiatric disorders seen in clinical practice: Various studies suggest that children with psychiatric disorders appear to suffer more frequently from sleep disorders.

IV. Sleep disorders resulting from general medical conditions or substance abuse: For example; adolescents using alcohol, tobacco, and coffee showed a significant relationship between sleep habits, substance use, and perceived daytime tiredness (Tynjala, 1997).

**A LITERATURE REVIEW OF SLEEP PROBLEMS IN CHILDREN WITH ASD**

Sleep disturbances are frequently observed in children with pervasive developmental disorder (ASD) (Hosino et al., 1984; Richdale, 1999; Segawa, 1982). However, because of their frequent perseverant motor activity, these children are very difficult to assess in the sleep laboratory. In general, children with pervasive developmental disorder tend to continue their restlessness or stereotyped activities into the usual hours of sleep; they often have difficulty in falling asleep and show nocturnal or early-morning awakening patterns.

In a study, sleep patterns of 75 autistic children showed that 65% had sleep disturbance, beginning very early in life (Hosino et al., 1984; Patzold et al., 1998). The form that the disturbance takes can be difficulty in both falling asleep and remaining asleep. This study suggests that the sleep disturbance of these children is closely related to the severity of their disorder and their overall prognosis. Rutter (1968) reported that 43% of nonverbal autistic children showed problems with sleep, as compared with 30% of verbal autistic children. Environmental factors are also found to contribute to sleep disturbance, which is decreased by means of psychotherapy or play therapy (Segawa, 1982).

In contrast, Hering et al. (1999), comparing actigraphy with parental questionnaires in 22 autistic children, find sleep patterns of autistic children like those of psychologically normal children, with the exception of early morning arousal time. When sleep studies are restricted to questionnaires or sleep diaries (Patzold et al., 1998; Taira et al., 1998), parents of autistic children report sleep difficulties more frequently.

Richdale (1999), in a comprehensive literature review, reports the success of behavioral interventions in the sleep problems of autistic children. The use of melatonin and chronotherapy is also reported as potentially useful in autistic children (Jan and O'Donnell, 1996; Jan et al., 1994), although further studies are needed.

Rett's syndrome, an autistic like neurologic disorder appearing primarily in girls, is also characterized by changes in normal sleep patterns (Glaze et al., 1987). REM sleep is decreased in percentage. Respiratory patterns are abnormal during waking hours, characterized by disorganized breathing and compensatory hyperpnea, but nocturnal respirations are usually normal.

According to another research, an Australian study: The results showed high prevalence of sleep problems with significantly more problems reported in the autism and Asperger groups (Typical children = 50%, autism = 73%, Asperger syndrome = 73%), with no significant dif-

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ferences between groups on severity or type of sleep problem. Children with Asperger syndrome were significantly more likely to be sluggish and disoriented after waking. In conclusion, children with AD may have more symptoms of sleep disturbance, and different types of sleep problems than children with autism.

A METHODOLOGICAL STUDY OF THE PREVALENCE OF SLEEP DISTURBANCES IN CHILDREN DIAGNOSED WITH AUTISTIC SPECTRUM DISORDERS (ASD) IN THE CHILD AND ADOLESCENT PSYCHIATRIC CLINIC, "AL. OBREGIA" HOSPITAL, BUCHAREST, ROMANIA.

A retrospective study was also carried out to determine the prevalence of sleep disturbances in the children diagnosed with autistic spectrum disorders, who were previously admitted in the child and adolescent department of a psychiatric hospital in Bucharest, Romania.

The subjects of study were 56 children, of ages 3-7 years old (mean age: 5 years), whose records documented behaviors consistent with the "Diagnostic and Statistical Manual, Fourth Edition, Text Revision" (DSM-IV-TR) criteria for "Autistic Spectrum Disorders" (ASD). Records of patients presenting with conditions co-morbid to autistic spectrum disorders like attention deficit-hyperkinetic disorder (ADHD), mental retardation and speech and language disorders were also used for the study.

From the total number of subjects: 56 (42 males, 14 females); 45 diagnosed with Autism (36 males), 9 with pervasive developmental disorder-not otherwise specified

Fig. 1. Male ratio with Autism, Asperger Syndrome and Atypical Autism.

Fig. 2. Co-morbid condition and gender ratio.
THE PREVALENCE OF SLEEP DISTURBANCES

(PDD-NOS)/ atypical autism (4 males) and 2 with Asperger’s syndrome (2 males) (fig. 1).

34 (26 males) of total (n=56) presented with a co-morbid conditions. Co-morbid conditions presented in subjects studied include: ADHD: 14 subjects (11 males, 3 females); Mental Retardation: 11 subjects (9 males, 2 females); Language delay: 12 subjects (9 males, 3 females), Hyperkinetic Syndrome: 1 subject (1 female) (fig. 2).

Sex ratios of:

- All subjects: 3.5: 1 (male to female respectively)
- Those with sleep disorders: 3.6: 1 (male to female respectively)
- Those with co morbid conditions: 3.25: 1 (male to female respectively)
- Those with both co morbid conditions and sleep disorders: 3: 1 (male to female respectively) (fig. 3).

The results demonstrated that 25% of the patients, presented with at least one sleep disorder. The common sleep disorders observed were insomnias ((including: difficulty falling asleep, restless sleep, and frequent awakenings) and parasomnias (sleep walking and nightmare disorders) (fig. 4).

In conclusion, 1 out of every 4 children diagnosed respectively)
with an autistic spectrum disorder in, presents with a sleep problem. The results suggest that both insomnias and parasomnias are the common sleep problems seen in these children, insomnias being more frequently encountered (78.6% of the cases with sleep issues) than parasomnias (fig. 5).

Fig. 5. Parasomnias and insomnia ratio.

Although the data collected shows that ASD is 3.5 times more frequent in males than females, please note from the sex ratio chart that the male to female ratios remain almost constant when compared with subjects with sleep disorders. This shows that the patient's sex plays a minimal or no significant role in the prevalence of sleep disorders in this particular group of ASD patients.

Multivariate logistic regression analyses also indicated that patient's, sex, parent's age and level of education (assessed by their occupation), has minimal, or no influence on the prevalence of sleep disorders. Although the roles of environmental factors are not completely understood, factors like co morbid disorders may have a slight influence on the prevalence of sleep disorders in these children.

REMARKS

From all the studies and research put into this topic, it is obvious that children diagnosed with an autistic spectrum disorder (ASD) have a higher prevalence of sleep problems.

Once a child is identified with a developmental disability, parents must accept diagnosis, control the disrup-