

# Sleep apnea in children linked to lower i. q. and learning impairments

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Often considered an adult condition, sleep apnea has now been recognized as a prevalent condition in children, and researchers now believe that many health issues suffered by children can be explained by sleep apnea, and in some cases, treated successfully. Most occurrences of sleep apnea in children appears in those aged 2 to 6. Obstructive Sleep Apnea (OSA) is equally found in both genders, and frequently a result of other abnormalities such as cleft palate, large tonsils and adenoids, allergies and obesity.

Since sleep apnea in children is often undiagnosed, pediatricians suggest that parents watch for symptoms of the condition, which are

- Difficulty breathing while asleep
- Pauses in breathing
- Snoring
- Restless sleep
- Heavy sweating while asleep
- Nightmares and night terrors
- Consistent bed-wetting

Untreated cases of sleep apnea can cause other health issues and concerns, such as bed wetting, cardiopulmonary disease, attention deficit disorder, and poor academic performance, as well as a generalized “ Failure to thrive.” A thorough examination by a pediatrician is recommended for parents who suspect their child might have sleep apnea. Commonly, the child’s medical history will be collected from the parents, after which the child will undergo a sleep test, known as a polysomnography. Treatment options can then be discussed. Adenotonsillectomy, or removal of both the tonsils and adenoids, is the most common solution for obstructive sleep apnea, as this procedure insures that the airway is not obstructed. Less commonly, craniofacial surgeries might be incorporated if the case is severe.

Both procedures can have potential post-operative complications, and should be used with caution. Another option is APAP, or Continuous Positive Airway

Pressure treatment, a long-term therapy for older children, and is more controversial and not approved by the FDA. If appropriate treatments are used, the long-term prognosis for children suffering from OSA is good, yet relapse is a possibility when the child reaches adulthood, so regular visits to a doctor and adherence to proper techniques is essential. (Sleep Apnea Info, 2006).

Studies at Johns Hopkins University School of Medicine, showed that sleep apnea could cause not only brain damage, but lower IQ and behavioral difficulties. Using brain scans on children with and without sleep apnea, researchers found that the cerebellum, hippocampus and frontal cortex of the brain had abnormalities—these areas of the brain are associated with memory and learning. Intelligence tests showed that children with sleep apnea scored consistently lower than children without any breathing disorder, by 16 points (Boyles, 2006). The research further showed that the children tested had deviated proportions of the brain chemicals, N-aceytl aspartate, creatine and choline - all of which signify actual brain damage. Whether or not this damage might be permanent, remains to be examined through new and continued research (Ansorge, 2006).

Although only about 2% of American children are said to have sleep apnea, Parents are encouraged to inform their pediatrician, and address any sleep issues or behaviors that indicate any form of sleep deprivation, and parents are also warned that ignoring these symptoms could result in permanent damage to a child. Often, the cause is as simple as enlarged adenoid or tonsils, for which surgery is an option. Sleep apnea can also be caused by

obesity and is often misdiagnosed as Attention Deficit Hyperactivity Disorder. Symptoms such as strange sleep positions, behavioral disorders, snoring, irritability, daytime sleepiness or hyperactivity are common indicators of sleep apnea and should be considered reason for a visit to the pediatrician to check for this possibility (Boyles, 2006).

The disruption of oxygen caused by Obstructive Sleep Apnea has now been linked to brain damage caused by oxygen deprivation in the brain when breathing is interrupted by the condition. A study in the American Journal of Respiratory and Critical Care now suggests pre-existing brain damage may in fact cause Obstructive Sleep Apnea, rather than the other way around. After researchers at the University of California performed brain scans of 21 healthy participants and 21 OSA patients, it was discovered that the OSA patients had less gray matter in the regions associated with memory, motor control, respiration and attention. Typically, oxygen deprivation will cause this reduction on both brain hemispheres, but in this study, OSA patients also had reductions in one hemisphere, in regions that control upper respiratory airway control and speech. Additionally, another 38% of OSA patients had a history of childhood stuttering, which suggests that stuttering might be caused by sleep apnea.

According to University of Louisville in Kentucky M. D David Gozal, these findings bear more research before it is clear which condition came first. A study in the journal Pediatrics has found that attention and hyperactivity behaviors have two times the prevalence in children who snore. " If there is indeed a cause-and-effect link, sleep problems in children could represent a

major public health issue," says Chervin. "It's conceivable that by better identifying and treating children's snoring and other nighttime breathing problems, we could help address some of the most common and challenging childhood behavioral issues. But more research will be necessary to show whether this is the case.

"This same result was found to be triple in boys 8 years old and under, based on pediatric clinic waiting rooms interviews with the parents 866 children. There is also strong enough evidence that sleep problems and behavior issues are linked, even though the study did not offer direct information to that end. Yet, according to primary author and associate professor Ronald Chervin, of the Aldrich Sleep Disorders Laboratory, a connection between the two is worthy of further research. Chervin believes that even though sleep issues can adversely affect day to day functioning and health, sleep problems in children as well as adults are often overlooked, and if symptoms such as daytime sleepiness, snoring, and apnea are addressed medically, all those concerned would function better. The research that Chervin and colleagues performed hoped to study a larger number of children, feeling that former studies in the area were limited.

In the two-pronged surveys, one researcher would ask about behavior patterns, and another asked about snoring, sleepiness and other symptoms of sleep-disordered breathing. All children studied were between the ages of two and fourteen, 54% of whom were boys, and researchers encouraged the parents to include help from their children in the assessment. The sleep habits section of the survey asked about severity of snoring and apnea,

difficulty in waking, and daytime, open-mouthed breathing, since all can affect sleep quality, and can indicate sleep-disordered breathing in children. In the behavior portion of the surveys, parents were asked to apply a number to the attributes signifying the frequency of each, and interviewed about the children's memory, academic performance, degree of restlessness, and inappropriate actions and extreme talking patterns. They found that twenty two percent of those children with high hyperactivity scores, also snored frequently, while only twelve percent of non-snoring children had elevated hyperactivity. Comparable findings appeared in the areas of hyperactivity in children who were also frequently sleepy, and suffered some type of apnea.

When the subjects were divided by age and sex, 30 percent of boys under 8 years old snored regularly and has higher hyperactivity scores, contrasting that of nine percent of the non-snorers. This, and other particulars in the study, suggested that " sleep-disordered breathing or sleepiness from other causes could each contribute, independently, to the risk of disruptive behavior." Chervin said that parents should ensure that children have a regular schedule, get enough sleep and practice other good sleep hygiene habits (Science Daily, 2002).