




## Abnormal Sleep Patterns in Down Syndrome

Abnormal sleep patterns appear common in children with Down syndrome.

More than half of children with Down syndrome may have abnormal sleep patterns and obstructive sleep apnea syndrome, and parents may not be able to determine whether their children are among those with sleep difficulties, according to an article in the April issue of Archives of Otolaryngology - Head & Neck Surgery, one of the JAMA/Archives journals. Obstructive sleep apnea (OSA) occurs when, during sleep, an individual's upper airway becomes blocked, resulting in a temporary cessation of breathing. OSA occurs in an estimated 30 to 60 percent of the Down syndrome (DS) population, according to background information in the article. Children with DS also are at greater risk for the development of obstructive sleep apnea syndrome (OSAS), a broader term for sleep abnormalities that includes complete and partial airway obstruction, chronic obstructive hypoventilation (inadequate ventilation with not enough air getting in the lungs) with hypercarbia (excess of carbon dioxide in the blood) and hypoxemia (lower than normal amount of oxygen in the blood).

Sally R. Shott, M.D., and colleagues from the Cincinnati Children's Hospital Medical Center, University of Cincinnati, Ohio, performed sleep studies on children with Down syndrome to determine the occurrence of OSAS. Fifty-six children with Down syndrome (ages four to 63 months, average age 42 months) completed overnight polysomnography (PSG), a test of sleep studies that monitors brain waves, breathing, stages of sleep and oxygen levels in the blood, among other variables. The children's parents also completed a survey about their child's sleep behaviors.

Thirty-two (57 percent) of the children had abnormal PSG results and evidence of obstructive sleep apnea syndrome. When the researchers included an elevated arousal index (ten or more disturbances in sleep per hour), 80 percent of the children had abnormal results. Rapid eye movement (REM) sleep should make up 25 to 30 percent of sleep time in children younger than five years old, and in this group, only nine children spent more than 25 percent of their sleep time in REM. Of the 35 parents who completed surveys, 69 percent of them reported that their children had no sleep problems; however, among that 69 percent of children, 54 percent had abnormal study results. Thirty-six percent of the children of parents who reported sleep problems in their children had abnormal PSG results.



"Because of the high incidence of obstructive sleep apnea syndrome in young children with own syndrome, and the poor correlation between parental impressions of sleep problems and PSG results, baseline PSG is recommended in all children with Down syndrome at age three to four years," the authors write.

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