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Children's sleep disorders on the rise as local clinics work on treatments

By Howard Cohen



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Smartphones, tablets and e-readers have made modern life the kind of speedy, all-access convenience Gene Roddenberry conceived of in his 1960s Star Trek program.

But health experts warn that the proliferation of these handy e-devices comes the flip side: impaired sleep for children and adults, and a possible connection between poor sleep and symptoms that are remarkably similar to attention-deficit hyperactivity disorder (ADHD)

"Blue light is the worst and that's what is emanating from laptop computers and that is stimulating the super nucleus and decreases melatonin and you cannot sleep," said Dr. Shahriar Shahzeidi, assistant professor in clinical pediatrics at Holtz Children's Hospital at the University of Miami/Jackson Memorial Medical Center, which conducts about 250 sleep studies a year.

Dr. Juan Martinez adjusts a mask on David J. Lawton, 15, at Joe DiMaggio Cystic Fibrosis and Pulmonary Center in Hollywood on Tuesday, May 14, 2013. David has been using the mask for two years. The mask helps keep air flow through the pharynx during sleep. David's mother, Barbara Ann Lawton, says he is sleeping better now, and no more snoring.

The bright light from these devices tricks the brain into thinking it is still light outside and the production of melatonin, which aids sleep, occurs in the dark. Lack of sleep can cause an increase in hyperactivity and trouble focusing on tasks... maladies that mirror ADHD.

Parents must set sleep routines and make sure their children are getting enough deep sleep. Also known as sleep hygiene, this is as important as brushing one's teeth before bedtime. In other words, put the video games and light-emitting devices away at night an hour before bedtime.

"The teenage age is a whole ballgame by itself. Teens have lots of things to disturb sleep. Being very social, they don't want to sleep because of texting and all these electronic things. Physiologically, they have delayed sleep phase syndrome - their sleep clock is set later. The problem in society is we have to be on time the next day and get prepared for going to school, which usually starts early in the morning. Because the majority of teens in the morning have lots of problems to wake up, during the day, between 2 and 4 pm, they are extremely sleepy because their cortisol level drops," Shahzeidi said.

"That problem usually corrects itself by early adulthood, after age 20," he said.

Restful sleep, including the deep REM stage, is particularly important for children for proper growth and development. Several studies have found that children today have lost about an hour of sleep over the last few decades. At least 25 percent of U.S. children 5 and younger have some sort of sleep issue and 10 percent of all children are snoring.

"The problem is growing because of environmental factors... electronics. Kids have more obesity and have sleep disorder breathing," said Dr. Juan C. Martinez, director of the Pediatric Sleep Center at Joe DiMaggio Children's Hospital in Hollywood, which conducts about 350 pediatric sleep studies annually.

Martinez recounts a recent example:

"As I was talking with a mother, she was talking to me about Nintendo and how [her son] likes to play late into the night. The first thing that came out of his mouth was, "You're not taking away my Nintendo!"

Other sleep problems in children include breathing disorders like sleep apnea and snoring, twitching limbs or restless leg syndrome.

"We do sleep studies for kids who have abnormal movements at night and are not clear on what they are," said Dr. Marcel Deray, director of the Sleep Disorders Center at Miami Children's Hospital, whose sleep lab does about 1,000 sleep studies, from birth to adult, annually. "For example, babies who have had an event of stopped breathing. When a baby stops breathing it can be acid reflux or seizures. These are two of the things we look at."

Sleep clinics also study why children have trouble slipping into delta, or REM sleep, which is crucial for rebooting the brain and maintaining memories of information that was learned during the day, such as class work - and discarding junk memories like the color of the textbook.

"REM is like wiping all the nonsense memories you learn during the day and the brain is ready to learn new things for the next day," explained Shahzeidi. Every memory of the day is mapped into the brain and the maps are synapses of neurons with different shapes for various events.

"The synapses stay there until you go to REM that night. During the REM phase these synapses are disengaged. If the kid actually does not go into REM sleep or has a sleep problem, then their synapses are not disengaging," Shahzeidi said. The result is that the child "becomes preoccupied and can't concentrate anymore and learn the new things."

There are four patterns of sleep and each should shift into the next, like a well-tuned transmission.

"If there is something disrupting it, it gets stuck in that stage and cannot advance to REM. Each time you stay in REM for 10 to 15 minutes that's enough to refresh and recycle all those synapses for the new memories," Shahzeidi said.

Teens should get up to nine hours of sleep a night.

"Teens normally have delayed sleep phase syndrome in which teens tend to be night owls and go to sleep late and get up late on the weekends. A lot of teens are sleep-deprived and get four to six hours of sleep at night. Teens are the sleepest of all the age groups for some reason. The state of Florida has teenagers get up earlier when they go to high school and the opposite of that should happen. Kids are getting up at 5:30 a.m. to get ready, and go to sleep at midnight. Sleepiness causes you to not be able to pay attention and absorb information, especially in the morning," Deray said.

Lack of sleep can also trigger obesity, Deray said. The hormone ghrelin is produced while awake and promotes feelings of hunger. Leptin is produced when we are asleep and induces satiation.

When you have a longer period of time to produce ghrelin this is "causing kids to eat more, they are awake more of the time and idle and have more time on their hands to do things. One thing you can do when awake is eat. There is a clear relationship between lack of sleep and obesity," Deray said.

Shelly Holguin, now 21 and a paralegal student at Miami Dade College, was treated at Miami Children's at age 8 when her family first discovered she had a sleep problem.

"I noticed my nails and toenails and my mouth would turn blue and I was not getting enough oxygen," Holguin said from her home in Hialeah.

In December 2011 she was referred to Shahzeidi, who diagnosed her problem: ROHHAD syndrome, or rapid onset of obesity hypothalamic hypoventilation and autonomic nervous system disorder.

"When I was born one of my neurons in the brain did not develop fully," she said.

"All of a sudden she started to gain weight and I saw her for headaches to start with," Shahzeidi said." She had central apnea, the brain doesn't order the lung to breathe. Genetically, she had this problem where the part of her brain, the medulla, does not fire the impulses and she forgets to breathe when going into the deep sleep. We don't know what is the cause, but we know it's genetic. When they really don't breathe, oxygen saturation goes down and might damage their brain. Carbon dioxide goes up and they get headaches."

To treat ROHHAD, patients are fitted with a special CPAP mask, which basically does the breathing for them while they sleep or nap.

"Dr. Shahzeidi was the first person who found the right type of machine for me. It helps me breathe when I need it and it records information when I have episodes, as it has its own database," Holguin said. "I'm basically overweight so that's another issue. Due to the central apnea, my system does not work the normal way. Everybody knows the brain is the most important part of the body and since I don't have that certain neuron, when it comes to studying I don't register the same type of information as other people. I have to take it slow - I don't grasp easily. I struggle because of that."

The mask and treatment is helping, both say.

"She's a very clever girl and in college now, and she's very happy with the treatment," Shahzeidi said.

Holguin said she eventually wants to become a lawyer to help others with unusual medical conditions like hers.

"It hasn't been easy. It is how it is. Sometimes (the mask] feels uncomfortable but at the end of the day this is me, this is what I have, this is for my benefit."

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