

Sleep Apnea in Children Linked to Detrimental Brain Changes

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February 28, 2024

STORY AT-A-GLANCE

- › Sleep apnea occurs when obstructions in your airway impair breathing during sleep. Sleep apnea is becoming increasingly prevalent among children, largely due to processed food diets and lack of breastfeeding
- › Up to 5% of children are affected by sleep apnea, which has been linked to adverse brain changes that can affect behavior and cognition in children
- › An even larger percentage of children may be susceptible to sleep-disordered breathing, which is characterized as snoring, noisy breathing, or open-mouth breathing during sleep
- › Sleep apnea and sleep-disordered breathing are related to suboptimal growth of the mouth, teeth and face

Editor's Note: This article is a reprint. It was originally published April 6, 2017.

Sleep apnea occurs when you have obstructions in your airway that interfere with your breathing during sleep. The flow of air can be partially blocked or even completely stopped altogether. Sleep-disordered breathing, a common problem, affects more than half of all men and over one-quarter of women.¹

Disturbingly, it's also becoming more prevalent among children, largely due to processed food diets and lack of breastfeeding. Sleep apnea in childhood has been linked to adverse brain changes that can affect behavior and cognition.

Estimates suggest up to 5% of children are affected by sleep apnea.² An even larger percentage of children may be susceptible to sleep-disordered breathing, which is characterized as snoring, noisy breathing or open-mouth breathing during sleep.

Fortunately, there are ways to prevent sleep apnea from occurring in the first place, and ways to address it without having to resort to a continuous positive airway pressure (CPAP) machine.

Sleep apnea and sleep-disordered breathing are related to suboptimal growth of the mouth, teeth and face. This may be prevented by exclusive breastfeeding for at least six months after birth and avoiding processed food diets.

If you're pregnant, please consider breastfeeding. Also, be sure to pay careful attention to your child's diet during his or her early years. A few simple changes can have an incredible impact on their lifelong ability to breathe and sleep comfortably.

If your child already struggles with impaired breathing, two treatment alternatives offer a great deal of hope: oral myofunctional therapy and learning how to breathe properly through the nose while awake.

Breathing Problems Can Exacerbate and Promote Other Health Problems

It's important not to ignore any breathing problems your children may have, as it can have serious repercussions for their health and academic performance. Not only do these breathing disruptions interfere with sleep, it also promotes poor health and chronic disease by:

Reducing the amount of oxygen in your blood, which can impair the function of internal organs and/or exacerbate other health conditions you may have

Slowing down or preventing critical detoxification of your brain tissue, as your brain's waste removal system, known as the glymphatic system, only operates during deep

sleep

Disrupting your circadian rhythm, resulting in reduced melatonin production and disruption of other body chemicals

Inhibiting the release of growth hormone, preventing optimal growth and development

Increasing sympathetic tone, causing problems with bedwetting, night sweating, night terrors, restless sleep and anxiety

Interfering with deep sleep, contributing to lack of focused attention during the day

Sleep Apnea in Children Linked to Cognitive Difficulties

By preventing deep, restorative sleep, reducing oxygenation and hampering brain detoxification, sleep apnea can have serious ramifications for your child's mental functioning.

According to published research,³ children with sleep apnea display troubling brain changes in areas involved with thinking and problem solving. These areas were found to be smaller in those with sleep apnea compared to children without sleep apnea.^{4,5} Previous studies have found sleep apnea can produce changes in the brain by causing nerve cells to die.

Studies⁶ have also shown that kids with sleep apnea tend to struggle more in school and perform worse in language arts, math and science compared to those who do not have sleep or breathing problems, scoring on average 11% lower on academic tests.

In this latest study, they used magnetic resonance imaging (MRI) to analyze and compare the volume of gray matter in children with and without sleep apnea.

Gray matter is the outer layer of the brain associated with high-level brain functions such as problem solving, language, memory, personality, planning and judgment. Indeed,

children with sleep apnea were found to have substantially lower gray matter volume than those without sleep apnea.

Paul Macey, director of technology and innovation at the Los Angeles School of Nursing and one of the authors of the study, told Reuters, "It really does seem that there is a change in the brain or that the brain is affected."

Lead author Dr. Leila Kheirandish-Gozal, director of pediatric clinical sleep research at the University of Chicago, added:⁷

"The Images of gray matter changes are striking. We do not yet have a precise guide to correlate loss of gray matter with specific cognitive deficits, but there is clear evidence of widespread neuronal damage or loss compared to the general population."

Next, the researchers aim to find out whether treating the sleep apnea will help children to recover and regain full function.

Considering what we now know about brain plasticity, chances are your child will be able to make a complete recovery once he or she starts breathing and sleeping normally. The key is treating it, ideally getting to the very root of the problem, which can often be traced back to the size and shape of the child's oral cavity.

How Size and Shape of Mouth May Contribute to Sleep Apnea

While obesity is a common factor that increases your risk for sleep apnea, an increasingly common root cause is related to an improperly shaped mouth and incorrect positioning of the tongue. This is particularly true for younger generations raised on infant formula and processed foods.

Dr. Weston Price's pioneering work showed how diet can affect your entire mouth, yet most people are still clueless about this effect, and how the size and shape of your oral cavity affect the placement of your tongue and your overall ability to breathe properly.

According to Dr. Arthur Strauss, a dentist and diplomat of the American Board of Dental Sleep Medicine, our mouths have progressively gotten smaller through the generations due to lack of breastfeeding and not chewing enough, combined with poor childhood nutrition.

Breastfeeding actually helps expand the size of your child's palate, shifting the jaw forward – two important factors that help prevent sleep apnea by creating ample room for unobstructed breathing.

Tongue placement also plays an important role, as revealed in a 2015 study on pediatric patients.⁸ The newborn palate is as soft as a drum, and if we place into it a bottle, pacifier, a spouted cup or the child finds his or her thumb, the palate may deform, making the nasal airway smaller, as well as preventing the ability of the teeth to erupt normally.

Having an abnormally short lingual frenulum⁹ can result in impaired orofacial growth in early childhood, reducing the width of the upper airway. The upper airway is very pliable, so this increases the risk of it collapsing during sleep. The study found that children with an untreated short frenulum developed abnormal tongue function early in life, which also impacted their orofacial growth and led to disordered breathing during sleep.

The researchers suggest pediatricians and otolaryngologists should systematically examine the lingual frenulum in children exhibiting difficulties such as trouble sucking, speech impediments, snoring or other breathing problems. They also note that while removing the frenulum can be helpful, it typically will not resolve all abnormal breathing patterns, so oral myofunctional therapy, both pre- and post-surgery is recommended to restore normal breathing through the nose.

What Is Oral Myofunctional Therapy?

Oral myofunctional therapy is a form of facial muscle therapy that helps reshape your oral cavity and promote proper placement of your tongue, head and neck, thereby alleviating sleep apnea. Four years ago, I interviewed Joy Moeller, a leading expert in

this form of therapy, about its many benefits. I've included that interview here for your convenience.

In a meta review¹⁰ of nine studies that included a total of 120 patients with obstructive sleep apnea, oral myofunctional therapy reduced the severity of sleep apnea by about 50% in adults and 62% in children. It also teaches you to breathe through your nose, with your tongue resting against the roof of your mouth. This is an important aspect of proper breathing that the Buteyko Breathing Method also addresses (see the next section).

Grinding and clenching your teeth is another common sign indicating you may have a sleep disorder and/or need to retrain your orofacial muscles. More specifically, teeth grinding is indicative of an upper airway obstruction, causing your body to compensate by attempting to move your jaw to open the airway. Getting all your oral facial and neck muscles to work correctly can make a big difference in this case.

Breathing Properly and Eating Real Food May Also Reduce Sleep Apnea

The Buteyko Breathing Method – named after the Russian physician who developed the technique – is another powerful approach that can help reduce sleep apnea. By learning to consistently breathe through your nose rather than your mouth, your breathing volume will be brought back to normal. This in turn allows for optimal oxygenation of tissues and organs, including your brain.

When it comes to your breathing patterns, diet may also play a role. Processed foods, which tend to acidify your blood in an attempt to maintain normal pH, will make you breathe heavier and can lead to chronic overbreathing. The reason for this is because carbon dioxide, which is in your blood, helps regulate pH.

Besides water, raw fruits and vegetables have the least impact on your breathing, followed by cooked vegetables. Processed, high-protein and high-grain meals have the greatest adverse effect on breathing.

Typical characteristics of overbreathing include mouth breathing, upper chest breathing, sighing, noticeable breathing during rest and taking large breaths prior to talking. If you recognize these signs, I would suggest taking a look at the Buteyko breathing method, because if you're not breathing correctly while awake, you're at increased risk of breathing problems while sleeping as well.

The Importance of Breastfeeding for Proper Oral Development

As mentioned earlier, one of the reasons sleep apnea is now starting to affect a growing number of young children may have to do with lack of breastfeeding, which sets the stage for abnormal development of the child's mouth. A processed food diet during early childhood further adds to the problems created by an improperly shaped oral cavity.

Dr. Kevin Boyd, a dentist at Lurie Children's Hospital in Chicago who is a major advocate of baby-led weaning, has compared modern Westernized infant feeding regimens to what he calls "ancestral-type" on-demand infant feeding regimens and the subsequent differences in mouth and facial bone structure. It turns out that when children are fed the way they were designed to be fed, it stimulates the structure of the mouth and facial bones to develop in an optimal way.

This begins with EXCLUSIVE breastfeeding, ideally for the first six months, followed by a gradual introduction of solid food while continuing to breastfeed. Breastfeeding should continue along with solids for a MINIMUM of one year according to the American Academy of Pediatrics, and for a minimum of two years according to the World Health Organization (WHO). Alternative methods of feeding for those who cannot breastfeed, for whatever reason, are specially designed cups.

Why Baby Bottles Should Be Avoided

According to the WHO and Boyd, feeding a child from a juice size cup is far better than using baby bottles with synthetic nipples. By placing the rim of the cup with a small arc

cut out for the baby's lower lip, and putting a small bolus of milk on the tongue, it will encourage babies to use their oral anatomy similarly to how it is used at the breast.

Avoid the temptation to use a regular spouted cup as it will discourage correct oral function, including encouraging the tongue to rest up and the palate to form the proper width and develop the airway.

The reason to avoid using a baby bottle is because it does not allow the natural suction a baby exerts on the breast. The slightest pressure of the baby's tongue pushing on the baby bottle nipple rewards the baby with milk, thus encouraging incorrect use of the oral anatomy.

It was assumed that babies massage the milk via a peristaltic wave motion, pressing the nipple up against the roof of the mouth. Alas, all of these assumptions have been solidly disproven by renowned lactation researcher, Donna Geddes, Ph.D. ^{11,12}

The following video shows the mechanics of breastfeeding using ultrasound. A vacuum is created when the middle of the baby's tongue comes down, which helps express milk from the breast. Next, the forward part of the baby's tongue pushes the mother's nipple inside, right behind the two front teeth.

This motion explains why ancestral feeding widens the jaw, and pushes both the upper and lower jaws forward. It also pushes the cheekbones in the mid-face forward. Add to that restricted frenums, and the tongue, lips and cheek do not usually allow the baby to breastfeed normally.

The sucking motion on the breast essentially acts like a piston that pushes the baby's mid-face outward. When a child is bottle fed, none of this happens, resulting in a narrow facial structure and poorly defined jaw. The anatomically incorrect palate and poorly aligned jaw bone also crowd teeth, resulting in crooked teeth.

Treating Root of Sleep Apnea Can Result in Better Health

If you know or suspect your child has sleep apnea, your first step would be to identify a qualified sleep specialist who can help you address the sleep apnea at the foundational level. Many have little in their tool bag besides a prescription for a CPAP machine, so you may have to do some homework and search around a bit.

Sometimes if the tonsils or adenoids are large, the doctor may recommend removing them. However, if the functions of nasal breathing, chewing and swallowing are not corrected, the structures may collapse again.

While a CPAP can provide symptom relief, it does not address the root problem, and is difficult to use, clean and maintain to boot. Besides, a mask on your face and a noisy, EMF-emitting machine next to your bed hardly encourage deep, restorative sleep. CPAP is rarely a satisfactory long-term solution for a child because it may push the face in and develop the "Smashed Face Syndrome."

If your child is obese, losing weight might significantly improve the problem. If the sleep apnea is related to tongue or jaw position, specialty trained dentists can design a custom oral appliance to expand the palate and bring the face forward to address the issue. These devices work much better when myofunctional therapy is incorporated into the treatment plan.

For adults, these appliances include mandibular repositioning devices, designed to shift the jaw forward. Others help hold the tongue forward without moving the jaw. Myofunctional therapy may help to make the appliances more comfortable and prevent temporomandibular joint (TMJ) problems.

The oral appliance approach has been recognized as part of the standard of care for sleep apnea since about 1995, and oral appliances are typically recommended as the first line treatment for mild to moderate sleep apnea for adults. One source where you can find a treatment specialist familiar with oral appliances is the American Academy of Dental Sleep Medicine.¹³

I would also encourage you to seek out an oral myofunctional therapist to work with your child. To find a qualified therapist, see the [Academy of Orofacial Myofunctional](#)

[Therapy's website](#).¹⁴

Also teach him or her the importance of proper nasal breathing. You can learn more about the Buteyko Breathing Method in McKeown's books, "The Oxygen Advantage," and "Close Your Mouth: Self Help Buteyko Manual," which can be found on amazon.com and ButeykoClinic.com. There's also a website dedicated to children, called ButeykoForKids.com.

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