



Sleep and Families

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Sleep is a family affair. When everyone gets what they need, there are benefits for all. When someone is short-changed, it affects everyone else. Research about sleep deprivation is now as compelling as the dangers of smoking 50 years ago, according to Dr. Charles Czeisler, head of the Division of Sleep Medicine at Harvard Medical School,¹ yet many households in Canada are lacking in this vital family resource. This shortage - fuelled by long working hours, new technologies and a 24/7 culture - not only affects productivity at work, performance at school and overall health, but also has a profound effect on families and family life.

What does sleep do for us?

Sleep has many different functions. Sleep is when we restore our physical energy. It's a time of deep rest and healing, like a "mini-hibernation." Stress hormones are shut off, heart rate decreases, blood pressure drops, metabolism rate slows and core body temperature falls. It's when growth hormones are secreted, important for growing children but also contributing to cell repair and replacement in adults. It's when our immune system is most active, producing T-lymphocytes that fight infection. It's when hormones affecting hunger and satiety (leptin and ghrelin) are secreted, affecting appetite, food intake and body weight.

Sleep isn't just important for our bodies, but our minds as well, since it affects mental function. This is

when we do our "mental housekeeping," processing and organizing our previous day's experiences while discarding irrelevant information (such as what colour sweater someone was wearing on the subway). It is also when we reinforce memory tracks and consolidate new learning. In fact, research shows we actually *increase* our learning when we sleep.

Symptoms of sleep deprivation are also symptoms of *stress*. In other words, sleep deprivation shows up in our bodies as stress, in terms of physiological symptoms. When we don't get enough sleep, cortisol (the main hormone in chronic stress) stays higher longer and has a damaging effect on the body. When we are sleep-deprived, we are less resilient in dealing with stressful situations, less effective problem solvers, less creative and innovative, less affable and can become difficult to get along with.



From the start of a live-in relationship to the later stages of our lives, sleep affects members of every family, both individually and collectively.

How sleep (and lack of sleep) affects families

Our sleeping patterns and family lives share a complex relationship, and deprivation affects not just individuals, but families and family systems as well. To examine the impact, let's first look at cohabiting couples. This usually involves sleeping together, which leads to a number of interesting dynamics that can affect the quantity and quality of sleep a couple receives. When two people share a bed, there are important factors that can affect their sleep that have to be negotiated (or agreed upon), such as the size of their bed, the firmness of their mattress, the temperature of their bedroom and the presence of electronics. Research has shown that light emitted from TVs, smartphones, tablets or light-emitting e-readers can interfere with a good night's rest.^{2,3}

The time at which one partner goes to sleep or wakes up in the morning can affect the other partner. If a couple has incompatible schedules, both of their sleeping patterns can be negatively affected by the actions and routines of each other. One person may stay up later than they would like because their partner wants to spend more time with them - thus depriving themselves of sleep. Discussion between sleeping partners is crucial to both getting their required amount of sleep. The decisions and agreements made not only affect whether each partner is getting the sleep that they individually need, but also represent negotiations that can either cause conflict in a relationship or provide opportunities for consideration, respect and compromise.

These are the *conscious* decisions affecting the bedroom and sleep. But there are involuntary factors as well. One of the biggest disrupters of sleep is a noisy or restless bed partner. The most common issues are snoring and frequent movement in bed. There are many causes of snoring, some mechanical (e.g., sleeping position) and others physiological (e.g., enlarged tonsils and adenoids, large uvula). What's fascinating is that some snoring can actually reach industrial-strength decibel levels, rattling windows and even disturbing sleepers in other bedrooms - and yet the snorer sleeps through the racket.

Two of the most common sleep disorders are obstructive sleep apnea and restless legs syndrome. With sleep apnea, one of the partners actually stops breathing many times during the night (in fact, many times an hour), often startling themselves awake in order to breathe. Restless legs syndrome causes people to feel discomfort in their legs that is relieved only by continually moving them around, which again can be quite disruptive to the other person in the bed. If this occurs later in life, some couples may decide to move to separate beds or bedrooms to manage their sleep.

A new parent's life is full of obstacles to sleep

For couples who decide to have children, a whole new variety of factors are brought into the household that affect sleeping patterns and sleep management. This begins with pregnancy. Expectant mothers often have trouble sleeping due to the increasing size of the fetus,

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the ability to feel the baby moving and increased trips to the bathroom at night. After the baby arrives, disrupted sleep becomes the norm. Babies cry to communicate when they're hungry, in need of a diaper change or needing to be settled. This can be disruptive to both the new mother (especially if she is breastfeeding) and her partner. This is always a challenging time for getting enough rest, which means it's an important time for negotiation.

As children get older (around 3 or 4 years of age), they are able to get up and dressed by themselves. Decisions have to be made as to whether a parent gets up with them or whether they train their kids to go to the family room or basement and entertain themselves so their parents can remain in bed. Many parents create a dependency where children expect company and attention from the time they wake up, robbing one or both parents of the extra sleep they need.

Teenagers have a physiological need for more slumber

The next chapter in the parents' sleep continuum is when children reach early adolescence. This is when something called "phase-shift delay" occurs, where teenagers start to stay up later and then can't wake up in the morning – a process often misunderstood by parents. Parents often complain that their children are party animals at night (when they won't go to bed) and then lazy slugs in the morning (when they can't, or won't, get up for school). In fact, there's a biological

basis for this. In adults, cortisol levels start to fall at about 10 p.m. and the sleep hormone melatonin is secreted. That's when we fall asleep. Then, somewhere between 6 and 8 a.m., melatonin secretion stops and we get a surge of cortisol. This allows us to wake up and start our day.

Among teenagers, this whole process is delayed by one or two hours. Cortisol doesn't shut off and melatonin doesn't kick in until later in the evening, and the reverse process doesn't occur until an hour or two later in the morning. Adolescents stay up late because they are not tired yet – it's physiological. If they don't wake up in the morning at the same time they used to, it's likely because their brains are still in "sleep mode" for an extra hour or two. So when they won't wake up, it's because they *can't* wake up – except with great difficulty.

Many jurisdictions have moved high school start times to 9 a.m. or even 10 a.m., which is a better biological fit for teenagers. These districts have noticed better attendance at school, improved academic performance and fewer behavioural problems when students are allowed to get the sleep they need in the time frame that corresponds to their physiology. There are also benefits to *families* from this rescheduling of school hours, as it can reduce morning conflict involved with getting kids up and improve mood and cooperation at home because teens are better rested.

Teenagers often face a clash between their physiological and academic needs. One issue is accomplishing late-night homework and studying for

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exams. Teenagers are often sleep-deprived (they need nine to 10 hours a night and most are lucky if they get seven), and when you add to that the tendency to stay up well past midnight, finishing assignments or cramming for exams, the problem can become magnified considerably. The more tired they are, the less well they perform on the very tests they stayed up late to study for. Teenagers who also work part-time jobs while going to school face additional challenges, since they must balance school and work with their relatively demanding sleep requirements.

Dr. Stanley Coren, a psychologist at UBC in Vancouver, did a meta-analysis on the effect of sleep deprivation on IQ scores. The results were quite startling. In a newspaper interview, Dr. Coren states that "one hour's lost sleep out of eight results in a drop of one point of IQ and for every additional hour lost, you drop two points. And it accumulates. So if you cheat on sleep by two hours a night over a five day week, you've lost 15 points."⁴

Functional MRIs show the same thing. With sleep deprivation, electrical activity in the brain decreases. For students who pull all-nighters, by late afternoon the next day, their mental function is significantly impaired and their performance plummets. Even the next morning, their cognitive function is seriously compromised.

Shiftwork creates irregular sleep requirements

Another factor that can have an impact on sleep within families is shift work. I was a family doctor for

17 years, which involved being on call at least once a week, working nights in the ER and being available to deliver babies after midnight. This often involved the phone ringing or my pager going off in the middle of the night, which was disruptive to my wife. The same scenario plays out in families of anyone who has to be available for overnight emergencies – doctors, operating room nurses, hospital technicians, security people or even business owners when there is a security breach at night.

It also affects people who are regular shift workers, such as police, firefighters, ambulance drivers, paramedics, security guards, factory workers and office cleaners. People who work an overnight shift are actually working against their own physiology. They are being required to be awake at the time when their bodies and brains are biologically programmed for sleeping. After their shift, they go home to try to get some sleep. This has an effect on everyone in the family, who are then required to maintain as quiet a home environment as possible. This includes everything from limiting or abstaining from radio and TV, phone conversations to spending time indoors with their friends. Any kind of noise might disrupt the sleeping family member who is in desperate need of sleep during the day, when that person's body is programmed to be awake. The need for other family members to accommodate the irregular sleep requirements of shift work can cause friction, and so discussion, explanation and negotiation are very important.



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Sleep requirements change as we age because our bodies change

At the other end of the life-cycle spectrum are circumstances such as menopause for women, where sleep deprivation can be a result of hot flashes or night sweats. As men get older, prostate enlargement often leads to frequent trips to the bathroom at night. People often find it hard to get back to sleep. Many disabilities, which become more prevalent with age, can also affect our sleep, such as shortness of breath due to lung or heart conditions, as well as aches and pains from arthritis, injuries or other musculoskeletal conditions.

Sleep disorders can affect us more as we age. Obstructive sleep apnea becomes more common, especially if a person has gained weight. This is a very underdiagnosed and undertreated condition where sleep deprivation takes a toll. Even though people with sleep apnea may be getting the requisite number of hours in bed and asleep, they are getting the *quantity* but not the *quality* of sleep they need. Incidentally, this is where a family member may be an asset: the sleep apnea is often first identified by the *partner*, not by the patient.

Sleep is a family affair

Sleep is one of the three basic pillars of good health, along with nutrition and exercise. From the start of a live-in relationship to the later stages of our lives, it

affects members of every family, both individually and collectively. Awareness of our requirements, and those of other family members, is key to managing our sleep and avoiding the consequences of deprivation. We need to understand sleep so we can talk about and act upon it with serious consideration. Sleep really *is* a family affair with widespread effects on our physical and mental well-being, and sleep management provides us with opportunities to strengthen our family relationships by being helpful, respectful, understanding and considerate of one another.♥

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¹ Sleep Health Foundation, *Sleep Is More Important Than You Might Think* (January 2014), accessed August 6, 2014, <http://bit.ly/1of8L6A>.

² Christian Cajochen et al., "Evening Exposure to a Light-Emitting Diodes (LED)-Backlit Computer Screen Affects Circadian Physiology and Cognitive Performance," *Journal of Applied Psychology* (May 2011), accessed August 6, 2014, <http://bit.ly/1pXbrT0>.

³ Gema Mesquita and Rubens Reimão, "Quality of Sleep Among University Students: Effects of Nighttime Computer and Television Use," *Arquivos de Neuro-Psiquiatria*, 68:5 (October 2010), accessed August 8, 2014, <http://bit.ly/1umgPDc>.

⁴ Life Directions, *Sleep: Are We Really Getting Enough?* (October 2005), accessed August 6, 2014, <http://bit.ly/1sbYCdW>.