NEWS IN REVIEW

SLEEP DEPRIVATION: Canada's Latest Epidemic

MARCH 2019

Hosted by MICHAEL SERAPIO
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SLEEP DEPRIVATION: Canada's Latest Epidemic

Video duration – 20:29

About a third of Canadian adults say they get less than the recommended eight hours per night. And for teens, it’s just as bad — more than half get much less than the eight to 10 hours per night shut eye recommended. So why is sleep so important? Studies show that sleep is necessary to recharge, improve memory and performance. A lack of sleep has been linked to health problems like obesity, diabetes, depression and in later years cardiovascular disease. So, why are we becoming a sleep deprived nation?

Related Content on curio.ca
• News in Review, November 2015 – Health Myths Debunked
• The Sleep Famine
• While You Were Sleeping
BEFORE VIEWING

1. How many hours of sleep did you get last night? Do you think you got enough sleep?
2. How many hours of sleep do you think a teenager needs to have each night?
3. Why do you think the body needs an adequate amount of sleep?
4. Do you think being overly tired is a health concern? Why or why not?

WHILE VIEWING

1. According to the experts, _________ of Canadians are not getting enough sleep.
   - a) Half
   - b) A third
   - c) A quarter
2. Not getting enough sleep can lead to which of the following health problems?
   - a) Increased risk of cardiovascular disease
   - b) Depression
   - c) Metabolic disease
   - d) All of the above
3. The use of social media is the main reason teenagers are sleep deprived.  ❑ TRUE or ❑ FALSE

4. Some schools have decided to start and end the school day later to accommodate adolescent sleep patterns.  ❑ TRUE or ❑ FALSE

5. The sleep test that was detailed in the video dealt with this important question:
   ❑ a) How does sleep affect memory?  ❑ b) How does sleep affect mood?
   ❑ c) How does sleep affect motor skills?

6. What are sleep spindles?
   ❑ a) The length of time we are in deep sleep.
   ❑ b) Evidence that our brain is shifting the tasks we learn every day from short-term memory to long-term memory.
   ❑ c) The number of times your sleep is interrupted.

7. The impact of sleep on memory has the greatest impact on younger people.  ❑ TRUE or ❑ FALSE
AFTER VIEWING

1. Conduct a class survey and find out the average number of hours of sleep that your classmates get. Is this average above or below the daily recommendation of 8-9 hours for a teenage brain and body to achieve a sense of rejuvenation?

2. Predict what may happen if many Canadians continue to live in a state of sleep deprivation.

3. Create a PSA for good sleep.
When we asked these adolescents what they were doing... social media played a big role in their sleep disturbance. So they have the phone in the room, it's vibrating at night, and they pick up the phone and they're responding to the text message. They will fall asleep again, of course, but if you do that multiple times a night it really lends to a significant amount of sleep deprivation.

– Dr. Indra Narang, Director of Sleep Medicine, Hospital for Sick Children
THE STORY

TASK: As you read, summarize each sleep theory on a separate sheet of paper.

The need for sleep
Sleeping is a powerful internal drive. Besides feeling extremely sluggish, going without sleep can radically affect your emotions and your thinking. Despite the obvious fact that sleep is a daily event for humans, scientists haven’t determined exactly why we sleep or why we are the only mammals that choose to postpone sleep when we need it.

However, scientists are clear about one thing: We need sleep.

The inactivity theory
There are several theories that attempt to explain the human need for sleep. The first is called the inactivity theory. This is one of the earliest theories of sleep and it suggests that inactivity at night served as a survival function. In fact, there may have been an evolutionary reason why animals that slept had an advantage over animals that remained active at night.
Put simply: sleeping at night keeps living things out of harm’s way at times when they might be vulnerable to prey. By being inactive and calm during the night, sleeping animals would be less easy to detect. Also, sleeping would allow animals to avoid accidents that could occur when roaming around in the dark of night. Another idea supporting the inactivity theory is that the primary function of sleep is to reduce energy demand at night when it is difficult to search for food.

**The restoration theory**

The second commonly accepted sleep explanation is the *restoration theory*. This suggests that our bodies restore themselves during sleep, an idea supported by the stark fact that humans (and animals) deprived entirely of sleep lose all immune function and die in 12-15 days. Other studies show that the body grows...
muscle, repairs tissues, and synthesizes proteins and growth hormones mostly, or in some cases only, during sleep.

The brain plasticity theory
Sleep is also rejuvenating because of its impact on the brain. The brain plasticity theory connects sleep to changes in the structure and organization of the brain. Sleep deprivation has a pretty clear negative impact on a person’s ability to learn and perform various tasks. This includes things like concentrating on class discussions or answering questions (hint: get some sleep on school nights).

Postponing sleep
Despite the body’s demand for sleep, humans are the only mammals known to postpone sleep for a variety of reasons (for fun, study or work). This decision to go without adequate sleep can affect perception, judgment, mood, learning, memory and may increase the risk of serious accidents and injury. Chronic sleep deprivation may lead to many different health issues including obesity, diabetes, heart disease and early death.

One counter-argument to the inactivity theory is that it is always safer to remain conscious in order to react to an emergency. Do you think there is any advantage to being asleep if your safety is at risk?
“Do not disturb”

If you are experiencing sleep deprivation, you may need to establish a sleep routine that gets you the sleep you need. One strategy would be to put your phone on “do not disturb” at night. You can catch up on those messages in the morning.

TO CONSIDER

1. What experiments do you think scientists might undertake in the future to explore the world of sleep?
2. What medical or technological innovations do you think could change our need for sleep and/or improve our sleep?
ACTIVITY #1: How to Get a Better Night’s Sleep

TASK: You will research ways to get a better night’s sleep.

- Form a group of four. Assign everyone a number from 1-4.
- Each person in the group will individually research and answer the question:

  *How can you get a better night’s sleep?*

Take on one of the following four perspectives when answering this question. Bolster your knowledge with information gained from experts in the field.

#1 Sleep routine
#2 Mental health
#3 Nutrition and fitness
#4 Pharmaceuticals

- Once your individual research is completed, share your findings with the entire group. Then, as a group, create a two minute “How to Get a Better Night’s Sleep” interactive presentation that highlights each of the perspectives you examined. The presentation should end with an analysis of which solutions seem to be the best for teens like you.
ACTIVITY #2: What Does My Body DO When It Sleeps?

1. Work with a partner and brainstorm questions that you have about sleep and what happens when you sleep.

2. Read through the following stages of sleep to see if the text answers some of your questions.

Sleep: More complicated than you think
Scientists used to think that, as you drift off to sleep, your brain and body goes into a shut-down mode that allows for physical and mental recovery. Now researchers realize that sleep is much more complicated and that it’s a more active state than you might think.

Stage 1: Falling asleep
Within minutes of falling asleep, your brain produces alpha and theta waves and your eye movements slow down. This initial stage of sleep lasts up to seven minutes. During this period, you can be easily woken. While falling asleep, you may experience the sensation of falling or you might jerk or twitch so suddenly
you wake yourself up. This sensation is called **hypnic jerks**. No one is sure why hypnic jerks occur but they are a perfectly healthy phenomenon. The likelihood of hypnic jerks may increase if you drink caffeinated beverages, you feel anxious or you exercise close to bedtime.

**Stage 2: Light sleep**
Stage 2 of the sleep cycle is characterized by fairly light sleep. Your body experiences sudden increases in brain wave frequency called **sleep spindles**. Sleep spindles are a key part of the transition to a more tranquil state, and as your brain stops thinking you can proceed to deep sleep. If you are a fan of taking power naps, just keep in mind that you need to wake up before stage 2 moves to stage 3, or you are going to feel very sluggish when you wake up.

**Stage 3 and 4: Deep sleep**
While you sleep, your brain goes through two main cycles:

Have you ever had a lucid dream? A lucid dream is a dream state where you actually recognize that you are dreaming and can take control of your dreams. You can find many websites devoted to teaching how to have a lucid dream. Lucid dreaming has been used with some success to teach those who suffer from frequent and debilitating nightmares how to take control of their dreams.
Non-Rapid Eye Movement (NREM) sleep and Rapid Eye Movement (REM) sleep. During stages 3 and 4, an even deeper sleep. Research suggests this is the more restorative stage of sleep where your body repairs muscles tissues, stimulates growth, boosts immunity and builds up energy for the next day.

**REM sleep**

Your body enters REM sleep about 90 minutes after falling asleep. Each REM stage can last up to an hour, and there can be five or six of them a night. During the final phase of sleep, the brain becomes more active. This is when most dreaming occurs. Your eyes jerk quickly in different directions, your heart rate and blood pressure increase, and your breathing becomes fast, irregular and shallow. Arm and leg muscles become temporarily paralyzed which prevents you from acting out your dreams.

REM sleep is thought to play an important role in learning and memory function as the brain consolidates information from the day into your long-term memory. On an average night, you move through these stages in a sequential fashion. Most non-REM sleep occurs early in the night and is followed by REM periods that tend to increase as the night goes on.
Dreaming

Everyone dreams, even if they can’t remember them. By some estimates, people can spend up to two hours a night dreaming. The exact purpose of dreaming isn’t known, but dreaming may help a person process their emotions. Events from the day often invade a person’s thoughts during sleep. People suffering from stress or anxiety are more likely to have frightening dreams. Some people dream in colour, while others recall dreams in black and white. Sleep is a complex phenomenon that researchers are still trying to figure out.

Follow up

- Did this article answer some of your earlier questions about sleep?
- Choose one question that remains unanswered and conduct some further research.

Did you know that people who are born blind experience dreams involving things like sound and smell rather than sight? The timing of the blindness in a person’s life also impacts what a blind person dreams about.
SOURCES


