



## **WHO ARE WE AND WHAT WE DO**

Dr. Reut Gruber (an expert in pediatric sleep) and her research team at the Attention and Behaviour Sleep lab the Douglas Mental Health University Institute.

Through a community- based research approach, we are working in partnership with Riverside and Lester B. Pearson School Boards; Ms. Gail Somerville (Research Advisor, Riverside School Board), and Dr. Cindy Finn (Director of Student Services, Lester B. Pearson School Board); to integrate sleep education and sleep intervention into schools.

## **GOALS**

The goals of this page are to provide teachers, school personnel, parents/guardians, and students with information about sleep. Specifically, this page addresses general information about sleep processes, sleep development, a brief summary of sleep disorders in children and adolescents, and strategies to help students manage sleep problems.

## **DEFINING SLEEP**

Sleep is divided into several different stages at night and we cycle in a predictable way through the stages from bedtime to morning. These stages of sleep are classified as either REM (rapid eye movement) or dreaming sleep, and NREM (non-rapid eye movement, which includes deep restorative sleep). All humans need both types of sleep to be healthy and well rested each day.

Each night children and adults move through one cycle of sleep to the next, and as this happens we are briefly awoken. These episodes happen around 5-7 times a night, but usually it's unnoticeable and we quickly fall back asleep.

How long and how well we sleep is managed by two biological processes. The first process has to do with how much sleep we've had and how long we are awake for. Our bodies contain an internal timer that tells us when we are sleepy and when our bodies are ready to wake up. The longer we are awake, the sleepier we get which helps us fall asleep. As we sleep our body's need for sleep goes away which tells us to wake up. The second process is determined by our biological clocks, which respond to how much light we are exposed to in a day. This clock helps us naturally regulate when we go to sleep and when we wake up.

## **KEY DEVELOPMENTAL CHANGES IN SLEEP**

As children grow and develop, the amount of sleep they need changes. The time spent in sleep decreases from 16-20 hours per 24 hours in newborns, to 10-11 hours for pre-school and school-aged children. Teenagers continue to need approximately 9 hours.

Teenagers have delayed sleep onset, which is why they have the tendency to go to bed later and wake up later.

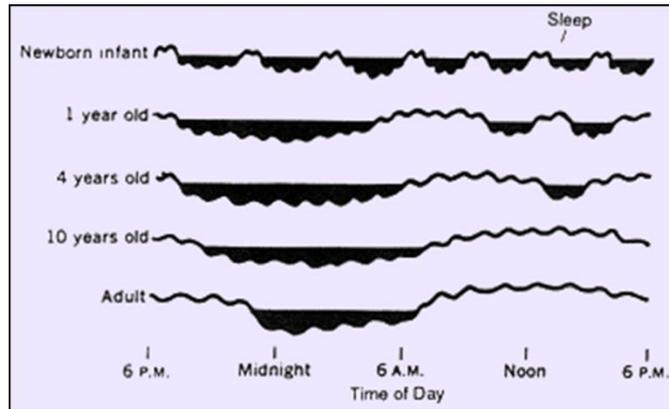


Figure 1. Changes in patterns across development.

### **SLEEP AS A KEY FACTOR IN ACADEMIC PERFORMANCE**

Research has shown that sleep plays an important role in children’s learning, memory, ability to pay attention, and make good decisions. While asleep, the brain works to store and process information and this is the reason why sleep is essential for academic success. As a result, children’s ability to sleep well on a regular basis has a major impact on their social and academic success.

### **SLEEP AS A KEY FACTOR IN MENTAL HEALTH**

Sleep is also needed in order to “keep cool” and regulate emotions. Getting enough sleep helps children react appropriately in positive and negative social situations. When a person does not get the amount of sleep they need they have less control over their emotions. This lack of emotional control leads to increased stress and arousal, which further interferes with sleep. It has even been shown that youth with sleep problems have higher rates of behavioural disorders and depression. When children and adolescents do not get enough sleep they demonstrate behavioural difficulties. Specifically, when young children do not get enough sleep they act impulsively, have difficulty paying attention, and are hyperactive; whereas, adolescents have the tendency to be moodier when they are overtired. Also, how much sleep someone gets impacts how they view themselves and whether they are capable of dealing with the stress of everyday life.

### **SLEEP AS A KEY FACTOR IN PHYSICAL HEALTH**

How our bodies function has a lot to do with our sleep patterns. When a person gets enough sleep their metabolism is normal, which means their bodies are appropriately breaking down and releasing energy. When a person does not get enough sleep their appetite and hormones are affected. Sleep plays a role in our bodily functioning which has shown to affect weight regulation and obesity, alongside a variety of other health related issues such as diabetes, hypertension, cardiovascular problems, and immune system functioning.

## **THE RELATIONSHIP BETWEEN SLEEP, PHYSICAL ACTIVITY, AND NUTRITION**

The amount of sleep a person gets plays a role in lifestyle choices they make. For example, our nightly sleep impacts our choices to exercise and what food we put into our bodies. However, our lifestyle choices play a role in how much and how well we sleep. This relationship tells us that sleep is a key factor in having a healthy lifestyle, and we need to prioritize sleep in order to maintain a healthy life.

### **EXERCISE AND SLEEP**

When we get a good workout in the day we sleep better at night. However, the time that we exercise is important to consider. Exercising close to bed time will give us a boost of energy and make it hard to fall asleep. Therefore, it is important to exercise regularly, but this should be avoided three hours before bedtime.

Not getting enough sleep at night reduces the chances that we will exercise, since we are tired and have low energy. Improved sleep not only means we are more likely to exercise, but our athletic performance will be stronger.

It is recommended that children aged 5 to 11 years old engage in a minimum of 60 minutes of moderate-to vigorous-intensity physical activity per day. Moderate-intensity activities will cause children to sweat a little and breathe harder, whereas vigorous-intensity activities will cause children to sweat and be ‘out of breath’. Following these guidelines will help children maintain a healthy body weight, improve their fitness, and obtain more and better quality sleep.

### **NUTRITION AND SLEEP**

Not sleeping enough has been linked with an increase in undesirable eating behaviour, such eating more calories and a preference for sugary, fatty foods. However, improvements in sleep habits may lead to higher our activity levels, reducing our sedentary habits, and makes us less likely to choose unhealthy snacks.

Lifestyle choices play a role in the issue of obesity and unhealthy weight. Healthy individuals obtain more sleep, engage in more exercise, and have healthier eating habits. All of these lifestyle factors interact with each other, and are crucial for maintaining a healthy weight and preventing obesity.

### **SLEEP AS A KEY FACTOR FOR SAFETY**

Sleep also has an impact on agile we are, and as a result how often we hurt ourselves. When children are overtired they are more clumsy and accidently get hurt more often. In teenagers, this lack of awareness is directly related to an increased risk of motor vehicle accidents.

### **WHO IS AFFECTED BY SLEEP DEPRIVATION AND SLEEP DISORDERS**

Busy schedules and their corresponding stress affect teachers as well as their students and the problem of sleep in children is much bigger than many people realize.



Of approximately 2 million Canadians aged 14-18, as many as 975,000 suffer from significant sleep deprivation, 20-40% of young children suffer from sleep problems, and 30% of children suffer from a sleep disorder.

## **WHAT DOES SLEEP DEPRIVATION LOOK LIKE**

When someone is sleep deprived they will have difficulty waking up in the morning and will most likely fall asleep throughout the day. This sleepiness will affect their ability to be on time for things scheduled in the morning and will result in a lack of attention throughout the day. Children who are sleep deprived may not appear to be lacking sleep because they are hyperactive and overly energetic. However, when a child is sleep deprived their bodies are trying to stay awake, which could look like a lot of fidgeting and moving around.

## **HOW TO PREVENT SLEEP DEPRIVATION**

It's not always easy for children get to bed on time and get a good night's rest. Our lives are filled with activities and responsibilities, which can push bedtimes later and result in not getting enough sleep. Although it can be hard, it's important that we make sure to prioritize sleep and take the necessary steps to get enough rest each night.

**Where we sleep is important:** The room should be comfortable (not too hot, bright or loud.)

**When we sleep is important:** Going to bed at the same time and waking up at the same time every day.

**What we do before we sleep is important:** Try not to look at a screen (TV/computer/phone) 1 hour before going to bed, avoid drinking caffeine 3-4 hours before bed, exercise in the daytime and avoid doing it in the evening.

Sticking with healthy sleep habits will increase the amount and quality of sleep children get each night and can change their lives.

## **COMMON SLEEP DISORDERS IN CHILDREN AND ADOLESCENTS**

Sleep disorders differ from sleep deprivation, although both result in not getting enough sleep. People who are sleep deprived will fall asleep when given the chance, whereas sleep disorders can make falling asleep or staying asleep incredibly difficult.

- Insomnia
- Parasomnias
- Sleep Disorder Breathing
- Restless Leg Syndrome
- Delayed Sleep Phase Syndrome
- Insufficient Sleep Syndrome



You can access more information regarding common sleep disorders in children and adolescents at: <http://www.douglas.qc.ca/page/abs-public-info>

## **WARNING SIGNS OF SLEEPINESS AND POSSIBLE SLEEP PROBLEMS**

Indicators that a student may be suffering from sleep deprivation can manifest in obvious ways such as: yawning, putting one's head down on the table, daydreaming, and falling asleep in under stimulated situations.

However sleepiness can manifest itself in less obvious ways, such as: constant tardiness, hyperactivity, irritability, overreacting (poor emotional control), inattention (poor focus), and impulsivity.

## **STRATEGIES TO HELP STUDENTS MANAGE SLEEP PROBLEMS**

When students are not getting enough sleep, there are ways to help them manage their sleep by changing daytime behaviours that could be preventing them from getting enough sleep.

### **WHAT TO DO AT SCHOOL**

#### ***Classroom lighting***

What to do: Light exposure in the morning helps the body's clock keep on track. Increase school's lighting, especially in the morning. Daylight is best so windows should be exposed, and time spent outside in the morning should be encouraged. Be aware that winter lighting may be less adequate than that of early fall or late spring.

#### ***School start times***

Adolescents naturally want to stay up later at night and wake up later in the morning. Schools that cater to this shift have been shown to improve student alertness, safety and healthy living habits. An appropriate start time could be determined by finding the average bedtime of the students and setting the school start time to allow for 9 to 9.5 hours of sleep.

#### ***Homework***

Homework may affect a child's sleep in three ways. First, the time it takes to finish the work may interfere with when the child should be sleeping. Second, work done too close to bedtime may leave a child too stimulated to fall asleep easily. Finally, if homework is done near the child's bed, the child may associate that areas with stress rather than sleep.

#### ***Strategy***

Schools may provide time during the day for students to complete homework. Timing of school events and extracurricular activities should be scheduled earlier, so not to carry late into the evening and interfere with student's sleep times. Separate work areas outside of the bedroom, especially not in the



bed, should be promoted in the school. Additionally, schools should also make students aware that doing stimulating or stressful activities, such as homework, late at night may make it harder to fall asleep.

## **WHAT TO DO AT HOME**

Sleep habits at home play an important role in the amount and quality of sleep students are getting each time. The following list provides recommendations for promoting healthy sleep habits at home.

- Exercising during the day,
- Avoid napping
- Refraining from eating large meals close to bedtime
- Refrain from consuming caffeinated beverages 3-4 hours before bedtime.
- Avoiding screens close to bedtime (computers, phones, TV)
- Avoid confrontational discussions before bedtime
- Avoid sleeping in too much on weekends (more than 2 hours past regular wake-up time)
- Avoid drinking or smoking
- Use beds for sleep and avoid stressful tasks, punishments, or arousing activities such watching televisions or using computers

## **HOW TO PROMOTE HEALTHY SLEEP**

In order to promote healthy sleep for students, sleep needs to be a higher priority in our lives. One way to help students prioritize sleep is by setting an example by role modeling the importance of sleep as a component of a balanced lifestyle. One option is to provide students and staff with sleep knowledge and skills through school based education programs.

### ***School based education programs***

*Sleep for Success* (SFS) is a school-based program that aims to promote balanced lifestyles by integrating sleep education in the existing health curriculum. For more information about Sleep for Success visit:

[Sleep for Success Website](#)

**Make sure to follow us on social media to get updates about sleep and hear about research studies that YOU can be a part of!**



@AttentionBehaviourandSleepLab



@ABSLab2082

**Contact information:**

Dr. Cindy Finn  
Director of Student Services, Lester B. Pearson School Board  
Lester B. Pearson School Board  
1925 Brookdale Ave.  
Dorval, (Québec)  
Email: [cfinn@lbpsb.qc.ca](mailto:cfinn@lbpsb.qc.ca)  
Telephone: 514-422-3000 ext. 32501

Dr. Reut Gruber, PhD Clinical Psychologist  
Associate Professor, Department of Psychiatry, McGill University  
Douglas Research Center  
6875 LaSalle Blvd.,  
Verdun (Québec)  
Canada H4H 1R3  
Email: [reut.gruber@douglas.mcgill.ca](mailto:reut.gruber@douglas.mcgill.ca)  
Telephone: (514) 761-6131 ext. 2050