Fatigue – Fact Sheets



WHAT IS FATIGUE?

In occupational health and safety, there is not a single definition of fatigue.

Fatigue is often thought of as the state of feeling very tired, weary or sleepy resulting from various sources such as insufficient sleep, prolonged mental or physical work, or extended periods of stress or anxiety. Boring or repetitive tasks can intensify feelings of fatigue. Fatigue can be described as either acute or chronic.

However, fatigue can include mental, physical, or subjective states. For example, as summarized by the CSA Group's report on workplace fatigue, these states include:

- Mental state:
    - Reduced mental capacity
    - Inattentive
    - Indecisive
    - Physical state:
    - Physiological weakness or degradation
    - Physically exhausted
    - Weak
- Subjective state:
    - Tired
    - Drowsy
    - Weary
    - Sleepy
    - Lethargic

IS FATIGUE A WORKPLACE ISSUE?

Everyone should be concerned about the impact of fatigue as it can be considered a form of impairment, making fatigue a workplace hazard. However, fatigue levels are not easily measured or quantified; therefore, it is difficult to isolate the effect of fatigue on incident and injury rates.

Workplace factors that may influence fatigue are shift rotation patterns,

balanced workloads, timing of tasks and activities, availability of resources, and the workplace environment (e.g., lighting, ventilation, temperature, etc.).

However, be sure to consider other factors beyond a lack of sleep including mental fatigue, such as mental workloads, demanding mental activities or stress, long periods of anxiety, or long periods of monotonous tasks, etc.

Many studies focus on the amount of sleep required. Some research studies have shown that when workers have slept for less than 5 hours before work or when workers have been awake for more than 16 hours, their chance of making mistakes at work due to fatigue are significantly increased.

Research has shown that the number of hours awake can be similar to blood alcohol levels. One study reports the following:

- 17 hours awake is equivalent to a blood alcohol content of 0.05
- 21 hours awake is equivalent to a blood alcohol content of 0.08 (legal limit in Canada)
- 24-25 hours awake is equivalent to a blood alcohol content of 0.10

Fatigue is regarded as having an impact on work performance. Government of Alberta, Labour* reports that most incidents occur when people are more likely to want sleep – between midnight and 6 am, and between 1 to 3 pm. Government of Alberta, Labour also reports that fatigue affects people differently but it can increase a worker's hazard exposure by:

- reducing mental and physical functioning,
- impairing judgement and concentration,
- lowering motivation,
- slowing reaction time, and
- increasing risk-taking behaviour.

WHAT ARE THE SIGNS OF FATIGUE?

Signs and symptoms of fatigue can vary, and include:

- weariness,
- tiredness,
- sleepiness, including falling asleep against your will ("micro" sleeps),
- irritability,
- reduced alertness, concentration and memory,
- reduced ability to be productive,
- mentally tired,
- physically tired,
- lack of motivation,
- depression,
- boredom,
- giddiness,
- headaches,
- loss of appetite,
- digestive problems, and
- increased susceptibility to illness.

WHAT ARE THE EFFECTS OF FATIGUE AND THEIR RELATIONSHIP TO WORK?

Consequences of fatigue can include mental and physical performance,

Studies report the effects of fatigue as:

- reduced decision making ability or cognitive processing,
- reduced ability to do complex planning,
- reduced communication skills,
- reduced productivity or performance,
- reduced alertness, attention and vigilance,
- reduced ability to handle stress on the job,
- reduced reaction time – both in speed or thought, as well as the ability to react,
- loss of memory or the ability to recall details,
- failure to respond to changes in surroundings or information provided,
- unable to stay awake (e.g., falling asleep while operating machinery or driving a vehicle),
- increased tendency for risk-taking,
- reduced physical capacity,
- reduced performance, such as a reduced ability to do task or job
- increased forgetfulness,
- increased errors in judgement,
- increased sick time, absenteeism, rate of turnover,
- increased medical costs, and
- increased incident rates.

WHAT ARE SOME FACTORS THAT ARE RELATED TO FATIGUE?

Work-related factors may include long work hours, long hours of physical or mental activity, insufficient break time between shifts, changes to jobs or shift rotations, inadequate rest, excessive stress, having multiple jobs, or a combination of these factors.

Fatigue is increased by:

- dim lighting,
- limited visual acuity (i.e., due to weather),
- high temperatures,
- high noise,
- high comfort,
- tasks which must be sustained for long periods of time, and
- work tasks which are long, repetitive, paced, difficult, boring and monotonous.

Sometimes, a sleep disorder such as those disorders that may affect length or effectiveness of sleep, cause extended wakefulness, or cause disruptions to our circadian rhythms may result in fatigue. You should ask your doctor or health professional for more information. These conditions include:

- insomnia
- sleep apnea
- restless legs syndrome
- narcolepsy

Illness, medical conditions, and pharmaceutical products (including over-the-counter medications) can also affect sleep length and sleep quality.

For example, substances such as nicotine, caffeine, and alcohol can affect the quality of sleep. Caffeine can remain in the body for about 3 to 7 hours. Alcohol may shorten the time to fall asleep, but it disrupts sleep later in the night. Nicotine also can disrupt sleep and reduce total sleep time.

HOW CAN A WORKPLACE ADDRESS FATIGUE?

Fatigue can be addressed through the workplace's safety management system, or as a separate fatigue management program. Creation of a program that addresses both workplace and personal factors may include to:

- identify the hazards and conduct a risk assessment for factors associated with fatigue
- develop and implement the organization's response to when a person is experiencing fatigue
- document of the steps to take to report fatigue in self or others
- design the work area to have appropriate lighting, temperature, and noise levels.
- develop administrative practices such as maximum hours of service, appropriate shift rotation, extended workdays, reducing or eliminating the need to do high risk activities between certain hours (e.g., between the hours of midnight and 6 a.m.), etc.
- assess physical and mental job demands.
- provide appropriate work, where possible. For example, try to offer a variety of tasks that vary in interest and movement throughout the shift.
- provide lodging or areas to rest or sleep, where appropriate and necessary
- educate and train about fatigue, including recognizing signs and symptoms of fatigue, how to gauge alertness, or steps to help achieve better sleep
- provide medical screening for health issues that may affect sleep
- provide mental health services, including employee assistance programs (EAP), as needed
- include fatigue as a possible factor and related causes of fatigue when investigating incidents

HOW MUCH SLEEP DO PEOPLE NEED?

It varies, but on average studies say we need at least 7 to 9 hours every day. Studies have reported that most night shift workers get about 5 to 7 hours less sleep per week than the day shift. (You can accumulate a sleep "debt", but not a surplus.)

Humans follow an "internal" or "biological clock" cycle of sleep, wakefulness, and alertness. Although these circadian rhythms are influenced by external clues such as the sun setting and rising, it is the brain that sets your pattern. Most cycles are 23-25 hours long and there are natural dips or periods when you feel tired or less alert – even for those who are well-rested.

HOW CAN I GET A "BETTER" SLEEP?

Prevention

If you suspect you may have a medical condition that interferes with your sleep, go to your doctor and have any concerns investigated.

Sleep Hygiene

There is no one way to get a good sleep – what works for one person may not work for another. In general, suggestions include:

- Go to bed and get up at the same time every day.
- Exercise regularly.
- Eat at regular intervals and consume a balanced diet of fruits, vegetables, whole grains, healthy fats and protein.
- Use your bed primarily just for sleeping (e.g., do not watch television, use your electronic devices, read, or do work in bed).
- If you are not sleepy, do not try to go to bed. Get up and read or do something quiet instead.
- Avoid caffeine, tobacco or alcohol – especially before bed time.
- Turn off the phone ringer and answering device speaker or phone notification.
- Ask family members to be respectful if one person is sleeping. Family members can use headphones for the TV and radio if necessary.
- Make the room as dark and quiet as possible. Use heavy, dark curtains, blinds, or a sleeping eye mask. Soundproof the room where possible or use ear plugs.
- Most people sleep better when the room is cool. Consider using an air conditioner or fan in the summer months.

WHAT ARE SOME TIPS FOR "GOOD" EATING HABITS THAT HELP ENCOURAGE SLEEP?

The Dietitians of Canada have made the following recommendations:

Establish Regular Eating Times

Our bodies need energy provided by food to be able to perform our daily activities. Having meals at regular times is important to function at our best. If you tend to skip meals or eat at irregular times, you may experience fatigue, food cravings or increased eating at the next meal. Aim to have at least three meals a day including a variety of foods as described in Canada's Food Guide.

If working night shifts, try to have your "main meal" before going to work. A heavy meal during the night may cause heartburn, gas or constipation, as well as make you feel sleepy or sluggish.

Snack Ideas for Your Work Break(s)

Having snacks in between meals is a great way to keep us nourished and give us the energy we need to complete our work shifts. At breaks, opt for healthy snacks that include combinations from a variety of foods from the four food groups. Here are some ideas:

- crackers or fruit and cheese
- social tea cookies and milk
- yogurt and a small low fat muffin
- celery sticks with peanut butter
- baby carrots with low fat cream cheese dip
- cut up fresh fruit or have nuts mixed with plain yogurt

Check your Caffeine Intake

Excessive intake of caffeine can cause insomnia, headaches, irritability and

nervousness. It is recommended that foods containing caffeine should not be consumed up to 8 hours before sleeping.

Common caffeine sources include:

- coffee
- tea
- iced tea
- cola drinks
- chocolate
- headache relievers

Alternatives:

- decaffeinated coffee or tea
- non-cola beverages
- water

Snacks for sleeping well

Going to bed with an empty stomach or immediately after a heavy meal can interfere with sleep. If you get home hungry, have a snack that is low in fat and easy to digest. A light snack before going to bed helps in getting a good restful sleep. Examples include:

- cereal with milk
- fresh fruit and yogurt
- oatmeal with raisins
- digestive cookies and milk
- piece of toast with a small banana
- multigrain bagel, toasted and lightly buttered

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