

Coffee and Safer Driving

Overview

Did you know that driving a vehicle when feeling sleepy causes more deaths and serious injury than drink driving? A safe counter measure to driver sleepiness, especially when a driver has reached the stage of fighting sleep, is to **STOP** driving, **DRINK** one or two cups of coffee (containing in total about 150 mg of caffeine) and take a short nap for about 15 minutes.

What are the causes?

Driving on long, undemanding and monotonous stretches of roads, such as motorways, when we would normally be asleep or when we are fatigued, places us and other road users at significantly greater risk of being involved in an accident. Research undertaken for the UK Department of Transport suggests that 1 crash in 10 is due to drivers nodding off – twice the number of accidents caused by speeding. Such accidents are more liable to result in death and serious injury as sleepy drivers do not usually swerve or brake before the impact. (Zomer and Lavie., 1990; Horne and Reyner 1995)

In New Zealand between 2002 and 2004, driver fatigue was identified as a contributing factor in 134 fatal accidents and 1,703 injury crashes (approximately 11 percent of fatal crashes and six percent of injury crashes each year) and data from Australian road statistics indicate that fatigue accounts for up to 30 percent of single-vehicle crashes in rural areas (Land Transport New Zealand). The figures are similar in an Italian study. Death of the driver is 11.4% in sleep related accidents versus 5.5% in general accidents. (Gabarino, 2001)

Who does it affect?

Many people use the roads as part of their job so it is not surprising that that many road accidents involve work vehicles. In the UK, the number of fatal road accidents involving lorries is almost double that for cars. (Department of Environment, Transport and Regions, 1998) In the US, the Dept of Transportation considers it likely that every lorry will be involved in at least one sleep related crash during the lifetime of the vehicle (Knipling and Wang, 1994) and that driver fatigue is a probable factor in 20-40% of truck crashes.

Night work also makes drivers vulnerable e.g. doctors on call or those driving home after night shifts between 2.00 and 6.00 being the worst period. (Pack, et al., 1995; Lyznicki, et al., 1995) At around 6am drivers are 20 times more likely to fall asleep at the wheel than at around 10.00. (Horne and Reyner, 1995) Studies suggest that being younger is an important risk factor for sleep related vehicle accidents (about half of the drivers are younger than 30-35 years)

Older drivers, and those driving after eating a large lunch, are also vulnerable to sleepiness in mid afternoon. At around 16.00, drivers are three times more likely to fall asleep than at 10.00 or 19.00, the time when our circadian rhythm of sleepiness is least. (Horne and Reyner, 1995)

Starting a long trip on the last workday before a holiday or having to get up unusually early to start a long drive, when there is an increased likelihood of fatigue, can also put drivers at higher risk of accidents. Holiday driving may be another time of risk. It frequently involves long hours behind the wheel, often in the heat and brightness of the sun and after a less-than-average amount of sleep. In addition such driving is often being undertaken after a long flight to reach our holiday destination - all of which adds up to a potentially dangerous combination.

However all of us are very vulnerable to sleepiness if we have had too little or poor quality sleep. Tiredness can easily affect our driving skills and judgements.

Recognising the danger signals

Driving can be a frustrating and tiring experience at the best of times. Sleep does not occur spontaneously and most drivers causing sleep related accidents usually deny having fallen asleep. This is not surprising, as it requires two to four minutes of sleep before any recollection of sleep is possible and most accidents occur when a driver has been asleep for no more than a few seconds. (Bonnet and Moore, 1982) However a micro sleep of only four seconds may have potentially fatal consequences; in that time a car driving at 88 kph (55 mph) will cover more than 30 metres (approx 100 feet) – virtually the length of a tennis court.

There are a number of warning signs that drivers should heed as signs of sleepiness:

- Constant yawning
- Tired or sore eyes or going out of focus
- Difficulty in keeping your head up
- Poor lane discipline
- Slow reactions
- Lack of concentration or day dreaming
- Erratic speed
- Difficulty in remembering the last few miles or kilometers

Drivers lullaby

Singing or listening to music to keep alert and counteract tiredness is sadly one of the popular myths. Such action provides only a short-term benefit and may be a distraction for drivers from being so aware of their sleepiness and poor driving. Similarly the benefits of cold air on the face, is also a myth. (Reyner and Horne, 1998) Such measures are often taken when a driver has reached the stage of fighting off sleep. At this point the safe thing to do is to stop driving as soon as possible, take a break for at least 30 minutes, drink a couple of cups of caffeinated coffee and take a brief nap. (Horne and Reyner 1999)

How can coffee help?

Much research has been undertaken to find out the best way of alleviating sleepiness among drivers. Some laboratory studies show that moderate amounts of caffeine, 100-200 mg (approximately one or two regular sized cups of coffee), significantly improved alertness in sleepy subjects (Lumley, et al., 1987., Griffiths, et al., 1990 and Reyner and Horne, 1998)

Other laboratory studies (Horne and Reyner, 1996; Horne and Reyner, 1997) have involved comparing a number of factors considered to make a difference. They include different periods of rest at a driving break, varying levels of caffeine intake and working with subject at different periods of the day, and varying the amount of sleep deprivation. Both caffeine and being allowed to nap, significantly reduced major and minor driving incidents, and had a powerful effect in suppressing sleepiness and signs of drowsiness.

It is well documented that stopping for a caffeine containing drink, such as a cup or two of coffee, and a short nap are the most effective counter measures for alleviating driver fatigue. (Horne and Reyner, 1999., Philip, et al. 2006., Sagaspe, et al., 2007., Anund, et al., 2008)

Frequently asked questions

Q. How much coffee should I drink to stay awake?

A. Research shows that taking a 30 minute break from driving and drinking one to two cups of coffee (providing about 150 mg of caffeine), and then taking short nap of 15 minutes, is the most effective way of alleviating driver fatigue.

Q. How long before the caffeine in a cup of coffee takes effect?

A. Up to two cups of coffee can increase alertness for several hours, but it takes on average 20-30 minutes to take effect. It is recommended to drink a cup of coffee at the beginning of a break and before taking a nap. On a long journey the advice is to take a break every two hours.

Q. Can coffee help sober you up if you drink alcohol?

A. A common myth, but not true! Coffee will not reduce the effects of alcohol nor does it increase your ability to break down the alcohol you drink.

Q. Does eating a bar of chocolate have the same effect as drinking coffee, as it also contains caffeine?

A. A 50 g (2 oz) bar of milk chocolate contains around 40 mg of caffeine whereas an average cup of coffee contains 80-150 mg of caffeine – the amount needed to alleviate tiredness

Q. I'm told that playing the car radio very loud or singing is actually all I need to keep me awake. Is that correct?

A. Sadly no. Such actions may even distract a driver from being as aware of their sleepiness and poor driving.

Q. Is coffee more beneficial to alertness at certain times of the day?

A. Most sleep related accidents happen when the body's circadian rhythm or natural clock, is at its low points: between 2.00 and 6.00, and mid afternoon between 14.00 and 16.00. However drinking one or two cups of coffee at any time when feeling sleepy will be effective in helping to keep you alert

Q. I am about to set off on a long distance holiday and will be doing most of the driving when we arrive after the flight. What advice would you give me?

A. Even if you have had sufficient sleep, jet lag will often cause daytime drowsiness so long distant driving should be avoided after a lengthy flight and when suffering from jet lag Follow the basic principles of safer driving - don't drive if you are feeling drowsy. The only safe thing to do is to take a break - stop driving, drink one or two cups of coffee and take a nap for about 15 minutes.

Q. I often have to drive a long distance after I finish my shift at work. What advice would you give me?

A. Most sleep related accidents happen when the body's circadian rhythm or natural clock, is at its low points: between 2.00 and 6.00, and mid afternoon between 14.00 and 16.00. So be particularly vigilant if you are driving at these times and be very aware of the signs of sleepiness. If you are aware of any signs of being tired when you are a driver, the only safe thing to do is to take a break - stop driving, drink one or two cups of coffee and take a nap for about 15 minutes.

Q. How do I know if I am risk?

A. There are a number of warning signs that drivers should heed as signs of sleepiness:

- Constant yawning
- Tired or sore eyes or going out of focus
- Difficulty in keeping your head up
- Poor lane discipline
- Slow reactions
- Lack of concentration or day dreaming
- Erratic speed
- Difficulty in remembering the last few miles or kilometres

If you are aware of any of these when you are a driver, the only safe thing to do is to take a break - stop driving, drink one or two cups of coffee and take a nap for about 15 minutes.

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