

The background is a solid black surface. Scattered across the top left and bottom right are several dark brown, roasted coffee beans. In the top right corner, there is a single gold-colored bottle cap. In the middle left, there is a single light green bottle cap. The text 'Less is more' is written in a large, white, cursive script across the center of the image.

Less is more

• GREAT HEALTH •
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**ALL ABOUT
ALCOHOL
& CAFFEINE**



Alcohol plays a large social role in both developed and developing cultures, but it also presents a serious problem. Significant harm results from the use of alcohol, and in many countries it is getting worse. Is alcohol something you should re-think?

THE BASICS

When we talk about alcoholic beverages, the alcohol we're talking about is a chemical compound called *ethanol*. It's quite similar to other kilojoule-containing compounds—fats, carbohydrates, and protein—because it's a carbon-based molecule, with hydrogen atoms attached. It also has an *alcohol* unit (O-H) at the end.

Alcohol is easily absorbed from our gastro-intestinal tract and into our blood stream. It is then processed in the liver, and getting rid of it from our system takes preference to metabolising other nutrients, such as fats and carbohydrates, that are in the blood stream.¹ As alcohol is processed it is converted to a number of different compounds, including acetaldehyde, which is highly toxic to the human body.¹

IS EVERYBODY DOING IT?

If you watch TV, you'd be forgiven for thinking that everybody drinks alcohol, and that they do so often. In fact, globally, about 45% of people never drink alcohol.² In Australia, about one in ten people never drink alcohol, and around one person out of every six drinks rarely—once a year or less. Only 8% of Australians drink daily.³ In Great Britain, 15% of adults have never drunk alcohol, and 20% of 16–24 year olds do not drink at all.⁴

Despite these figures, many Western cultures are grappling with the problem of alcohol.



THE ALCOHOL PROBLEM

According to the National Health and Medical Research Council (NHMRC) in Australia, alcohol is responsible for a considerable burden of death, disease and injury that is not limited to the drinkers themselves. Families, innocent bystanders, and the general community also suffer.⁵

PHYSICAL IMPACTS—SHORT TERM

Alcohol has obvious, fairly immediate impacts on the human brain. It is a central nervous system depressant, working quickly to create a relaxed state, as well as loss of inhibitions.^{6,7} As alcohol continues to slow down brain function, effects include loss of balance, difficulty walking, blurred vision, slurred speech, slowed reaction times, and impaired memory.⁸⁻¹⁰

Alcohol also irritates the stomach,¹¹ resulting in nausea and vomiting, made potentially fatal by the fact that the gag reflex is inhibited by alcohol. Through its impact on the nervous system, alcohol can inhibit both breathing and heartbeat,^{12,13} and can reduce the body's core temperature, resulting in hypothermia.¹⁴ Decreased blood sugar levels can also result from alcohol consumption, potentially leading to seizures.¹⁵

Alcohol inhibits the anti-diuretic hormone—the hormone that reduces urination if you are becoming dehydrated.¹⁶ The result is unchecked urination, leading to dehydration that also contributes to a hangover.¹⁷

A large or very quick intake of alcohol can result in a blackout—a period of time for which the intoxicated person cannot recall key details of events, or even entire events, and during which they may engage in dangerous or risky behaviour such as crime, violence, driving or unsafe sex.^{18,19}



Disturbingly alcohol related hospital admissions are gradually rising in Australia. During 2011/12 in Australia, more than 67,000 people were admitted to hospital for alcohol.²⁰ While the number of emergency department presentations caused by alcohol is unknown, it is likely to account for a large proportion of all presentations.²¹⁻²³ Alcohol accounts for 13 per cent of all deaths among 14–17-year-old Australians – it has been estimated that one Australian teenager dies and more than 60 are hospitalised each week from alcohol-related causes.²⁴

PHYSICAL IMPACTS—LONG TERM

In Australia, alcohol is second only to tobacco as a preventable cause of drug-related death and hospitalisation.^{25,26} Alcohol consumption has been associated with a range of diseases that may cause death or reduce quality of life. These include:

CARDIOVASCULAR DISEASE

Alcohol can contribute to high blood pressure, heart disease, stroke and other circulatory problems.²⁷⁻²⁹ While there is some evidence that moderate alcohol consumption may protect against cardiovascular disease, this does not apply to all groups or ages, and has been overstated.^{30,31} Further, the potential cardiovascular benefits from alcohol can also be gained in other ways, such as exercising and eating well.³²⁻³⁴ The National Heart Foundation in Australia, as well as other health authorities, have clearly stated that they do not recommend drinking alcohol as a way of protecting against heart disease.^{3,35}

CANCERS

Alcohol is carcinogenic (cancer-causing) to humans, and is known to increase the risk of cancers of the mouth, throat, voice box, oesophagus, liver, colorectum (bowel) and breast.³⁶ According to the Cancer Council of Australia, there is no known safe amount of alcohol. Any amount you drink increases your risk of cancer.^{37,38} When you drink, the alcohol in your body is converted into a toxic chemical called acetaldehyde.¹ Research suggests that this can damage your DNA and stop your cells from repairing that damage, which can lead to cancer.³⁹ In Australia, 5% of all cancers are caused by alcohol, including one in five breast cancers.⁴⁰

OVERWEIGHT AND OBESITY

Alcohol adds kilojoules to the normal diet, and may cause people to eat more than usual by stimulating appetite.⁴¹ Alcohol also increases fat storage by reducing the amount of fat your body burns for energy. Because we can't store

alcohol in the body, our systems want to get rid of it as quickly as possible, and this process takes priority over metabolising other nutrients and burning fat.¹ For many people, alcohol is a key contributor to excess body weight.⁴²

RISKS TO UNBORN BABIES

Alcohol enters the bloodstream of the foetus when the mother drinks, and can cause a range of birth defects as well as growth, developmental, behavioural and learning problems (Foetal Alcohol Syndrome), which may persist into adulthood.⁴³ Children with Foetal Alcohol Syndrome have smaller brains.⁴⁴ They may also have fewer brain cells, or fewer cells that are able to function correctly.⁴⁵ Miscarriage, stillbirth, premature birth and small birth weight are all associated with a mother's drinking during pregnancy.⁴⁶ Alcohol can have a particularly damaging effect on the baby in the very early stages of pregnancy—before the woman even knows she's pregnant.⁴⁷ Alcohol also enters the breast milk.⁴⁸

LIVER DISEASES

In Australia alcohol consumption is the most common cause of cirrhosis of the liver.^{3,49} For women, studies have shown that drinking one glass of alcohol per day is associated with a significantly elevated risk.⁴⁹ Once there are any signs of liver problems, no matter from what cause, it is recommended to abstain from any kind of consumption.⁴⁹

DEPENDENCE

Alcohol is an addictive drug and regular use can result in alcohol dependence.⁵⁰ In Australia, around 7% of people are dependent on alcohol, with men being at higher risk than women of developing an alcohol-use disorder.⁵¹

LONG-TERM COGNITIVE IMPAIRMENT

Alcohol is a neurotoxin, which means it can poison the brain. This is particularly significant for the developing brains of young people.⁵² Drinkers who consume alcohol at harmful levels have structural and metabolic brain changes, and have an increased risk of dementia.⁵³

OTHER CONDITIONS

Alcohol can also contribute to infertility,⁵⁴ osteoporosis,⁵⁵ and pancreatitis.⁵⁶

MENTAL IMPACTS

There is some evidence that alcohol increases the risk of highly prevalent mental health conditions such as depression and anxiety.^{57,58} Additionally, a high level of drinking is a major risk factor for suicide and suicidal behaviour in both males and females in all age groups.^{59,60} Research shows that on average 37% of suicides involved acute alcohol use.⁶¹

SOCIAL IMPACT

In Australia, alcohol has become much more readily available over the past two decades, through extended trading hours and a proliferation of outlets, including supermarket liquor stores. In terms of price relative to income, alcohol is easier to buy than it ever has been before.³

There are a range of adverse social consequences resulting from alcohol consumption, which include harm to family members, children, friends, workmates and strangers.⁶² Problems associated with alcohol include noise, litter, offensive behaviour, vandalism, aggression, petty crime, assault, and road safety issues.^{63,64} Alcohol is responsible for many deaths on Australian roads,⁶⁵ and is also associated with 44% of fire injuries and 34% of falls and drownings.⁶⁶

Alcohol is significantly associated with crime, with studies suggesting that alcohol is involved in up to half of all violent crimes, including domestic violence, and a lesser but substantial proportion of other crimes.^{67,68} According to the National Drug Strategy Household Survey (NDSHS), in 2007 approximately 1 in 4 Australians were a victim of alcohol-related verbal abuse and 13 % were made to feel fearful by someone under the influence of alcohol.⁶⁹

A 2011 survey found that experience with alcohol was high among Australian secondary school students. By the age of 15 years, 89% of students had tried alcohol. The proportion of students drinking in the month before the survey increased with age, from 21% of 14 year olds to a peak of 59% among 17 year olds.⁷⁰





RESPONSIBLE DRINKING

Government bodies around the world advocate a variety of approaches to ensure people drink responsibly and safely. In Australia these include:³

- limiting the amount of alcohol consumed (e.g. no more than two standard drinks per day)
- preventing the consumption of alcohol by children and young people
- not drinking and driving
- not drinking while pregnant or breastfeeding

Some families believe that by allowing their children to drink at the family dinner table—as is done in many Mediterranean countries—they are introducing them to alcohol in a responsible setting where they can learn to drink sensibly. This is not thought to work in the Australian context because of the heavy drinking culture that exists.³ Evidence suggests that the younger a person begins drinking—no matter what the context—the more likely they are to become alcohol-dependent.⁷¹



ANOTHER OPTION

For many people, abstinence is the pathway of choice.² This may be for health reasons—especially those genetically prone to alcoholism or at risk of illnesses such as heart disease or cancer. It is worth remembering that there is no safe level of alcohol consumption—consuming any amount of this toxin increases the risk of cancer. It is also worth remembering that a variety of health authorities clearly state that the potential benefits of drinking alcohol are far outweighed by the potential damage, and that non-drinkers should not start drinking purely to obtain those potential benefits. Some people choose abstinence in order to avoid the short-term effects of alcohol, such as loss of control and hangovers, while others choose abstinence as a response to the significant social impacts of alcohol. Could abstinence be the best option for you?



What about caffeine?

Caffeine is a popular drug, and like alcohol, plays a significant social role. Physiologically, caffeine stimulates the central nervous system and both skeletal and cardiac muscle,⁷²⁻⁷⁴ relaxes smooth muscle,⁷⁵ stimulates the secretion of stomach acid,⁷⁶ increases the levels of glucose in the blood,⁷⁷ and increases urination.⁷⁸

While caffeine gets a bad rap for its addictive and harmful properties (such as damaging sperm),^{79,80} occasionally bits of positive news pop up. So is it bad for us, or in fact beneficial?

HERE ARE SOME GOOD THINGS CAFFEINE DOES

Caffeine helps people feel more alert and energised for some hours after consumption.^{81,82} That's the main reason for its popularity. Studies show it improves performance on mental speed-related tasks, but not on complex reasoning tasks.^{83,84} Large amounts of caffeine (equivalent to 6–9 cups of coffee) may improve muscle performance in activities like running and cycling.⁸⁵ Caffeine also increases the flow of blood gases through the lungs, and improves respiratory muscle strength. Because of this, it's being used to treat breathing problems in some premature babies.^{86,87}



AND THE BAD...



Caffeine constricts the blood vessels in the brain,⁸⁸ and can increase blood pressure.⁸⁹ Due to its diuretic effect, and subsequent calcium loss,⁹⁰ there is some evidence that caffeine may increase the risk of osteoporosis.⁹¹ It can play havoc with sleep,^{92,93} and can produce tremors due to over-stimulation of the central nervous system.⁹⁴ In some people, caffeine has also been shown to increase levels of anxiety.^{95,51}

Caffeine consumption can significantly reduce a woman's ability to fall pregnant,⁹⁶ and some evidence suggests that drinking coffee or cola while pregnant may result in low birth weight,⁹⁷ and impaired development.⁹⁸ Although uncommon, newborns can experience caffeine withdrawal and suffer irritability and restlessness, sweating, crying and difficulty sleeping.^{99,100}

Caffeine is a key social *drug*, and is considered to be the most widely used central nervous system stimulant in the world. While it doesn't create the levels of injury seen with alcohol, many people choose to eliminate caffeine from their lives to avoid the side effects, and to experience drug-free, vibrant living.

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