

Alcohol kills brain cells: Addressing a medical myth

March 12 2013, by Nick Dorsch



Credit: AI-generated image ([disclaimer](#))

Do you ever wake up with a raging hangover and picture the row of brain cells that you suspect have started to decay? Or wonder whether that final glass of wine was too much for those tiny cells, and pushed you over the line?

Well, it's true that alcohol can indeed harm the brain in many ways. But directly killing off [brain cells](#) isn't one of them.

The brain is made up of [nerve cells](#) (neurons) and [glial cells](#). These cells communicate with each other, sending signals from one part of the brain to the other, telling your body what to do. Brain cells enable us to learn, imagine, experience sensation, feel emotion and control our body's movement.

Alcohol's effects can be seen on our brain even after a few drinks, causing us to feel tipsy. But these symptoms are temporary and reversible. The [available evidence](#) suggests alcohol doesn't kill brain cells directly.

There is some evidence that [moderate drinking](#) is linked to improved mental function. A 2005 Australian [study](#) of 7,500 people in three age cohorts (early 20s, early 40s and early 60s) found moderate drinkers (up to 14 drinks for men and seven drinks for women per week) had better [cognitive functioning](#) than non-drinkers, occasional drinkers and [heavy drinkers](#).

But there is also evidence that even moderate drinking may impair [brain plasticity](#) and cell production. [Researchers](#) in the United States gave rats alcohol over a two-week period, to raise their alcohol blood concentration to about 0.08. While this level did not impair the rats' motor skills or short-term learning, it impacted the brain's ability to produce and retain new cells, reducing new brain cell production by almost 40%. Therefore, we need to protect our brains as best we can.

Excessive alcohol undoubtedly [damages brain cells](#) and [brain function](#). Heavy consumption over long periods can damage the connections between brain cells, even if the cells are not killed. It can also affect the way your body functions. Long-term drinking can cause brain atrophy or

shrinkage, as seen in brain diseases such as stroke and Alzheimer's disease.

There is debate about whether permanent brain damage is caused directly or indirectly.

We know, for example, that severe alcoholic liver disease has an indirect effect on the brain. When the liver is damaged, it's no longer effective at processing toxins to make them harmless. As a result, poisonous toxins reach the brain, and may cause hepatic encephalopathy (decline in brain function). This can result in changes to cognition and personality, sleep disruption and even coma and death.

Alcoholism is also associated with nutritional and absorptive deficiencies. A lack of Vitamin B1 (thiamine) causes brain disorders called [Wernicke's ncephalopathy](#) (which manifests in confusion, unsteadiness, paralysis of eye movements) and [Korsakoff's syndrome](#) (where patients lose their short-term memory and coordination).

So, how much alcohol is okay?

To reduce the lifetime risk of harm from alcohol-related disease or injury, the National Health and Medical Research Council recommends healthy adults drink no more than two standard drinks on any day. Drinking less frequently (such as weekly rather than daily) and drinking less on each occasion will reduce your lifetime risk.

To avoid alcohol-related injuries, adults shouldn't drink more than four standard drinks on a single occasion. This applies to both sexes because while women become intoxicated with less alcohol, men tend to take more risks and experience more harmful effects.

For pregnant women and young people under the age of 18, the

guidelines say not drinking is the safest option.

So while alcohol may not kill brain cells, if this myth encourages us to rethink that third beer or [glass of wine](#), I won't mind if it hangs around.

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Citation: Alcohol kills brain cells: Addressing a medical myth (2013, March 12) retrieved 19 April 2024 from <https://medicalxpress.com/news/2013-03-alcohol-braincells-medical-myth.html>

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