

Mobile phones are not linked to brain cancer, according to a major review of 28 years of research

September 7 2024, by Sarah Loughran and Ken Karipidis



Credit: Keira Burton/Pexels

A systematic review into the potential health effects from radio wave exposure has shown mobile phones are not linked to brain cancer. The review was commissioned by the World Health Organization and is published today [in the journal *Environment International*](#).

Mobile phones are often held against the head during use. And they emit

[radio waves](#), a type of [non-ionizing radiation](#). These two factors are largely why the idea mobile phones might cause brain [cancer](#) emerged in the first place.

The possibility that mobile phones might cause cancer has been a long-standing concern. Mobile phones—and wireless tech more broadly—are a major part of our daily lives. So it's been vital for science to address the safety of radio wave exposure from these devices.

Over the years, the [scientific consensus](#) has remained strong—there's no association between [mobile phone](#) radio waves and brain cancer, or health more generally.

Radiation as a possible carcinogen

Despite the consensus, occasional research studies have been published that suggested the possibility of harm.

In 2011, the International Agency for Research on Cancer (IARC) classified [radio wave exposure as a possible carcinogen to humans](#). The meaning of this classification was largely misunderstood and led to some increase in concern.

IARC is part of the World Health Organization. Its classification of radio waves as a possible carcinogen was largely based on limited evidence from human [observational studies](#). Also known as [epidemiological studies](#), they observe the rate of disease and how it may be caused in human populations.

Observational studies are the best tool researchers have to investigate long-term health effects in humans, but the results can often be biased.

The IARC classification relied on previous observational studies where

people with brain cancer reported they used a mobile phone more than they actually did. One example of this is known as [the INTERPHONE study](#).

This new systematic [review](#) of human observational studies is based on a much larger data set compared to what the IARC examined in 2011.

It includes more recent and more comprehensive studies. This means we can now be more confident that exposure to radio waves from mobile phones or wireless technologies is not associated with an increased risk of brain cancer.

No association

The new review forms part of a [series of systematic reviews](#) commissioned by the World Health Organization to look more closely at possible health effects associated with exposure to radio waves.

This [systematic review](#) provides the strongest evidence to date that radio waves from wireless technologies are not a hazard to human health.

It is the most comprehensive review on this topic—it considered more than 5,000 studies, of which 63, published between 1994 and 2022, were included in the final analysis. The main reason studies were excluded was that they were not actually relevant; this is very normal with [search results](#) from systematic reviews.

No association between [mobile phone use](#) and brain cancer, or any other head or neck cancer, was found.

There was also no association with cancer if a person used a mobile phone for ten or more years (prolonged use). How often they used it—either based on the number of calls or the time spent on the

phone—also didn't make a difference.

Importantly, these findings align with [previous research](#). It shows that, although the use of wireless technologies has massively increased in the past few decades, there has been no rise in the incidence of brain cancers.

A good thing

Overall, the results are very reassuring. They mean that our [national](#) and [international](#) safety limits are protective. Mobile phones emit low-level radio waves below these safety limits, and there is no evidence exposure to these has an impact on human health.

Despite this, it is important that research continues. Technology is developing at a rapid pace. With this development comes the use of radio waves in different ways using different frequencies. It is therefore essential that science continues to ensure radio wave exposure from these technologies remains safe.

The challenge we now face is making sure this new research counteracts the persistent misconceptions and misinformation out there regarding mobile phones and [brain cancer](#).

There remains no evidence of any established health effects from exposures related to mobile phones, and that is a good thing.

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