

# High levels of education linked to heightened brain tumor risk

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A university degree is linked to a heightened risk of developing a brain tumour, suggests a large observational study, published online in the *Journal of Epidemiology & Community Health*.

Gliomas, in particular, were more common among people who had studied at university for at least three years than they were among those who didn't go on to higher education, the data show.

The researchers base their findings on more than 4.3 million Swedes, all of whom were born between 1911 and 1961 and living in Sweden in 1991.

They were monitored between 1993 and 2010 to see if they developed a primary brain tumour, and information on educational attainment, [disposable income](#), marital status, and occupation was obtained from national insurance, labour market, and national census data.

During the monitoring period, 1.1 million people died and more than 48,000 emigrated, but 5735 of the men and 7101 of the [women](#) developed a brain tumour.

Men with university level education, lasting at least three years, were 19% more likely to develop a glioma—a type of cancerous tumour arising in glial cells that surround and support neurons in the brain—than men whose educational attainment didn't extend beyond the period of compulsory schooling (9 years).

Among women, the magnitude of risk was 23% higher for glioma, and 16% higher for meningioma—a type of mostly non-cancerous brain tumour arising in the layers of tissue (meninges) that surround and protect the brain and spinal cord—than it was for women who didn't go on to higher education.

Taking account of potentially influential factors, such as marital status and disposable income, only marginally affected the size of the risk, and only among the men.

High levels of disposable income were associated with a 14% heightened risk of glioma among men, but had no bearing on the risk of either meningioma or acoustic neuroma—a type of non-cancerous [brain](#) tumour that grows on the nerve used for hearing and balance.

Nor was disposable income associated with heightened risk of any type of [brain tumour](#) among the women.

Occupation also seemed to influence risk for men and women. Compared with men in manual roles, professional and managerial roles (intermediate and high non-manual jobs) were associated with a 20% heightened risk of glioma and a 50% heightened risk of acoustic neuroma.

The risk of glioma was also 26% higher among women in professional and managerial roles than it was for women in manual roles, while the risk of meningioma was 14% higher.

Single men also seemed to have a significantly lower risk of glioma than married/co-habiting [men](#), but, on the other hand, they had a higher risk of meningioma. No such associations were evident among the women.

This is an observational study so no firm conclusions can be drawn about cause and effect, and the researchers point out that they were not able to glean information on potentially influential lifestyle factors.

But they emphasise that their findings were consistent, and they point to the strengths of using population data.

**More information:** Socioeconomic position and the risk of brain tumour: a Swedish national population-based cohort study, *Journal of Epidemiology & Community Health*, [DOI: 10.1136/jech-2015-207002](https://doi.org/10.1136/jech-2015-207002)

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