Public Health Scotland

Risk of COVID-19 among teachers in Scotland

Risk of hospital admission with COVID-19 among teachers compared with healthcare workers and other adults of working age in Scotland, March 2020 to July 2021: population based case-control study.

September 2021

Why was this research done?

This research sought to answer the question: compared to other working-age adults, are teachers at increased risk of being admitted to hospital with COVID-19.

Education is closely linked to the health and wellbeing of children and young people. Over the course of the pandemic, Scotland, like many countries, has adopted different approaches to providing education. At times schools were largely closed to in-person education, and in other periods they have been fully open.

Making decisions on the best approach requires gathering information on the risks and benefits for those working in and attending schools. This research aimed to contribute to this evidence and was undertaken as part of a wider programme of work in Public Health Scotland on COVID-19 and education.

How did we investigate this?

This research is based on routine health records for 1.3 million people in Scotland between March 2020 and July 2021. We used a method known as a 'case-control study'. In this, we divided people into two groups: those who have tested positive for COVID-19 since the start of the pandemic (known as cases) and those who had not had a positive COVID-19 test (known as controls).

Among cases and controls, we identified teachers using data from the General Teaching Council and healthcare workers using NHS employment records. We called the remaining people who were not teachers or healthcare workers 'the general population'. We then undertook statistical analysis to look at the risk of COVID-19-related hospital admission in teachers and compared it with that in the general population. We also explored if this risk was different during times of school closure and opening, by analysing results for five time periods.

This research was approved by the Public Benefit and Privacy Panel for Health and Social Care (Reference 2021-0073).

What were the results?

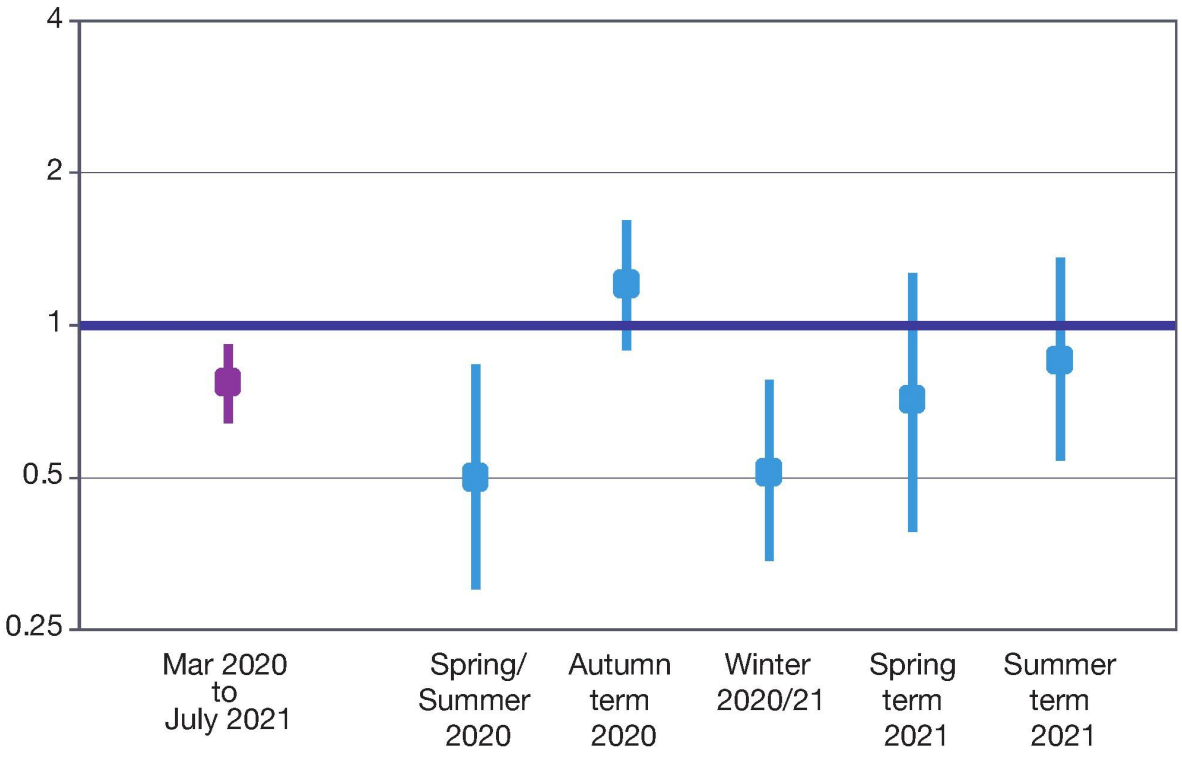
Overall, between March 2020 and July 2021, teachers were 23% (95% confidence interval 8% to 36%) less likely than the general population to be admitted to hospital with COVID-19. The 95% confidence interval is a measure of uncertainty, and indicates a plausible range this value could take. Accordingly the risk in teachers could be anywhere from 8% to 36% lower than in the general population.

We also found that teachers' risk of hospitalisation with COVID-19 varied between periods of school closure and opening. When schools were largely closed in spring and summer 2020, teachers were at 50% (95% confidence interval 16% to 70%) lower risk than were the general population to be admitted to hospital with COVID-19. During the autumn term 2020, teachers were 20% more likely than the general population to be

admitted to hospital. However, the 95% confidence interval ranged between 11% less likely to 61% more likely, so we cannot say with confidence that teachers had a higher risk than the general population at this time. In the summer term of 2021, we found that teachers were 15% less likely than the general population to be admitted to hospital with COVID-19. However, the 95% confidence interval ranged between 46% less likely and 36% more likely.

These results were 'adjusted' statistically to account for differences in age, sex, home area, level of deprivation, ethnicity, and previous health conditions between the groups.

Rate ratio for admission to hospital with COVID-19 for teachers compared with the general working age population in Scotland, March 2020 to July 2021



The line at 1 reflects the comparison group of other working-age adults. The square markers show the rate ratio for hospital admission for COVID-19 for teachers, in each period. The vertical lines above and below this show the 95% confidence interval for this rate ratio. Values below 1 indicate lower risk for teachers, and above 1 higher risk for teachers. Where the 95% confidence interval crosses 1, we cannot be certain whether their risk was higher, lower or the same.

What do the results mean?

The study did not find any evidence for an increased risk of being admitted to hospital with COVID-19 for teachers compared with other working-age adults. Between March 2020 and July 2021, teachers' overall risk of hospital admission was lower than that of other working-age adults. This risk varied over time, with a pattern of being lower than the general population in periods when schools were largely closed, and similar to that of the general population when schools were open.

The lower risk during periods of school closure is likely to be due to the teacher group, in general, being more able to spend time working from home than many other working age adults, and therefore having fewer contacts (on average) with other people. Other things that may influence the differences in risk include: teachers being generally healthier than others in ways that could not be measured as part of this research; there being other occupational groups in the general population who have particularly high risk; and, in the more recent period, differences in vaccine uptake.

In the study we were also able to look at uptake of the COVID-19 vaccine. This showed that there have been good levels of uptake among teachers. This is likely to have contributed to reducing their risk of hospitalisation in the summer term of 2021.

What are the limitations of this research?

In this research, we focused on hospital admissions after testing positive with COVID-19 rather than testing positive only. This is because COVID-19 testing varied throughout the pandemic, and therefore hospital admission with COVID-19 provides a more robust measure. For example, at the start of the pandemic, testing was largely limited to healthcare workers, meaning that lots of cases of COVID-19 among other groups won't have been detected with a positive test. As a result, our results provide information on more severe COVID-19 illness rather than the risk of getting a COVID-19 infection. As is considered good practice, the decision to focus on a specific outcome was taken before any data relating to teachers were analysed.

As we expect the risk of individuals to vary, we suggest that our results are best used to guide policy decisions for groups and settings. Decisions on individual risk and work adjustments should be undertaken between individuals and their employer.

Within education settings, we were only able to look at risk for teachers as part of this particular piece of in this research. It is also important to consider other education staff when making policy decisions. Public Health Scotland is currently exploring opportunities to repeat this research for Early Learning and Childcare staff and would welcome collaborations with other staff groups.

Lastly, we were unable to look at the effect of specific measures taken within schools, such as improved ventilation and physical distancing. Therefore, it is not able to provide evidence on the impact of these measures in reducing COVID-19 risk.

Accessibility and translations

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