

Research Summary

Emergency department visits and hospital admissions among infants following exposure to smoke from the mine fire

November 2022



Background

The fire in the Morwell open cut brown coal mine adjacent to the Hazelwood Power Station blanketed the town of Morwell and the surrounding area in smoke and ash for six weeks in February and March 2014. The smoke event was recognised as one of the most significant air quality incidents in Victoria's history. It caused considerable community concern within Morwell and the broader community. In response to these concerns, and following extensive community consultation, the Hazelwood Health Study was established to examine the impacts of the mine fire. The HHS involves multiple research streams targeting different health outcomes and different vulnerable groups.

The **Latrobe Early Life Follow up (ELF) Study** is the part of the Hazelwood Health Study that follows the health and growth of children who were younger than two years old when the fire occurred. This includes children whose mothers were pregnant with them at the time.

Analysis aims

We aimed to find out if exposure to smoke from the mine fire either during pregnancy, or during the first year of childhood, was associated with increased hospital presentations and admissions over a one-year period following the fire.



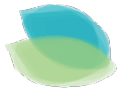
What we did

After getting ethical approval for this research, we obtained anonymous birth records for all babies born in the Latrobe Valley before, during and after the fire (born 1st March 2012 to 31st December 2015), who had been linked with records of presentations to the emergency department or admissions to hospital by the Victorian Data Linkage Unit. We used air pollution data provided by CSIRO and the residential address at the time of birth to estimate how much mine fire smoke the child or their pregnant mother was exposed to during the fire period.

We looked to see if different amounts of mine fire smoke exposure were associated with higher risks of emergency department visits or hospital admissions, for either any reason or for causes related to infections, allergies or respiratory conditions. For children whose mothers were exposed to smoke during pregnancy, we evaluated these outcomes in their first year of life. For children who were exposed to smoke during infancy, we evaluated them in the year following the fire. In our analysis we considered other factors that can affect health of children, such as infant sex, the mother's smoking status during pregnancy, and usual background levels of air pollution, to distinguish the specific influence of the smoke from the mine fire.

Meet the team

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What we found

We found that children whose mothers were exposed to higher levels of mine fire smoke during pregnancy were more likely to present to the emergency department for allergies or skin rash than children whose mothers were exposed to lower levels or no smoke at all during pregnancy.

We also found that children exposed to the mine fire smoke during their first year of life were more likely to present to the emergency department for respiratory conditions and infections, compared to those not exposed. There were no other associations between exposure to smoke, by pregnant mothers or by children in their first year of life, and emergency department presentations. Also, no association was found between exposure to smoke and hospital admissions in any group of children.

A detailed paper describing the findings from this analysis can be requested from the study team by emailing contact@hazelwoodhealthstudy.org.au

Considerations

We calculated exposure based on the mother's home address. This means we may not have captured changes in smoke exposure that resulted from each family's movements within and outside of the Latrobe Valley during the fire. Also, this study could not determine contributing reasons for increases in emergency department visits following the fire. For example, an increase in presentations to an emergency department might reflect an increase in some health conditions following the fire, or it might reflect a heightened level of worry among parents in the year after the fire, leading them to be more likely to seek care for their children at an emergency department.



Where to from here?

These findings will be shared with relevant organisations and the scientific community to ensure they are used to shape services for the future health of the Latrobe Valley. Additionally, findings will help guide responses to severe smoke events in the future. We will also assess if exposure to smoke from the coal mine fire was associated with increases in other indicators of health care utilisation among this group of children in the year following the fire. These will include evaluation of attendances to general practitioners, and dispensations of prescriptions for medications that treat infections, allergies and asthma.

The HHS is led by Monash University with collaborators from Menzies Institute for Medical Research, Federation University, The University of Adelaide, and CSIRO.

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