

Research Summary

General practitioner visits and medications prescribed for infants following their exposure to mine fire smoke

January 2023



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 (HHS) 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 two years of childhood, was associated with increased general practitioner (GP) visits and dispensing of prescribed medications over a two-year period following the fire

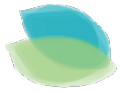


What we did

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 2014), who had been linked by the Centre for Victorian Data Linkage with Medicare Benefits Schedule (MBS) data on visits to GPs and Pharmaceutical Benefits Scheme (PBS) data on dispensed prescription medications. 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 numbers of GP visits for any cause, or filling of prescriptions for medicines used to treat infections, eczema or respiratory symptoms. For children whose mothers were exposed to smoke during pregnancy, we evaluated these outcomes in their first two years of life. For children who were exposed to smoke during infancy, we evaluated them in the two-year period 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.



What we found

We found that children whose mothers were exposed to higher levels of mine fire smoke during pregnancy were more likely to have prednisolone, or similar steroid medications, dispensed in the first two years of life. These medications are mainly used to treat croup and asthma symptoms.

We found that children exposed to the mine fire smoke during their first two years of life were more likely to have prescriptions for antibiotics dispensed in the two years following the fire, and prescriptions for skin creams for eczema in the second year after the fire. They were also more likely to visit a GP, particularly in the first year after the fire.

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 GP visits and prescriptions dispensed following the fire. For example, the findings could reflect a heightened level of worry among parents in the two years after the fire leading them to seek care more frequently for their children for minor symptoms, or there could randomly have been more influenza or gastroenteritis viruses circulating in childcare centres around the areas where there was the most smoke. Finally, only prescribed and subsidised medications were included in the PBS data, so we could not account for some asthma puffers and weak steroid skin creams bought over-the-counter.

Meet the team

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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 use of health services among these children later in childhood, to see if the associations persist.

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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