

Research Summary

Impacts of the Hazelwood mine fire on ambulance attendances, emergency department presentations and hospital patient admissions for mental health conditions

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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, with the concentration of smoke contaminants reaching high levels.

The smoke event 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.

Meet the team

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Analysis aims

The aim of this analysis was to examine whether coal mine fire-related air pollutants were associated with increased rates of ambulance attendances, emergency department presentations and hospital patient admissions for mental health conditions.



What we did

Latrobe Valley ambulance and hospital services data were obtained from Ambulance Victoria and the Victorian Department of Health for the period 1 July 2010 to 31 March 2015. Air pollution modelling by the CSIRO estimated hourly levels of fine air particles in the smoke with a diameter of 2.5 thousandths of a millimetre or less (PM_{2.5}). A statistical method called time series analysis was used to measure the associations between daily average PM_{2.5}, and daily rates of ambulance attendances, emergency department presentations and hospital admissions for mental health conditions in the Latrobe Valley. We looked at the use of these health services during the first 30-days of the fire when smoke concentrations were highest, from 9 February to 10 March 2014, and compared that with health service use before and after the Hazelwood event. We also took into account the influences of other factors, such as season, temperature, and public holidays.

A more detailed paper describing the findings from this analysis can be found at

<https://hazelwoodhealthstudy.org.au/study-findings/publications>

What we found

The analyses found that levels of mine fire-related PM_{2.5} during the first 30 days of the fire, were associated with short-term increases in ambulance attendances and emergency department presentations, but not hospital patient admissions, for mental health conditions in the Latrobe Valley area.

The most prominent effects were observed after about 5 days of smoke exposure, where for each 10 µg/m³ increase in mine fire-related PM_{2.5}, the estimated risk of an ambulance attendance for anxiety increased by 38% and the risk of an emergency department presentation for depression increased by 36%.



Considerations

While the findings suggest there was an increase in the rates of ambulance attendances and emergency department presentations for mental health conditions in the Latrobe Valley associated with the coal mine fire smoke, the data are not sufficient to link any individual's case to the mine fire.

An important limitation to interpretation of these data relates to the challenge of making rapid clinical judgements in relation to mental health status during an emergency situation such as an ambulance attendance. There is potential for misdiagnosis in these circumstances.



Where to from here

The HHS has a continuing program of research, which includes clinical respiratory examinations and periodic surveys of mental health and wellbeing, to better understand health impacts of the mine fire in affected communities.

These HHS results will be shared with relevant organisations to ensure they are used to shape services for the future health and wellbeing of the Latrobe Valley

The Hazelwood Health Study is a collaborative program of research led by the Monash University Schools of Public Health and Preventive Medicine and Rural Health in partnership with Federation University, the Menzies Institute for Medical Research at the University of Tasmania, the University of Adelaide and the CSIRO.

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