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| **Respiratory symptoms after coalmine fire and pandemic: a longitudinal analysis**  |
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| **Introduction/Aim:** Extreme but discrete fine particle <2.5μm (PM2.5) exposure is associated with higher prevalence of respiratory symptoms. It is unknown whether these effects abate, persist, or worsen over time, nor whether COVID-19 exacerbates PM2.5 effects.**Methods:** We analysed longitudinal survey data from a cohort residing near a 2014 coalmine fire in regional Australia. A 2016/2017 survey included n=4,056 participants, of whom n=612 were followed-up in 2022. Items include questions about 7 respiratory symptoms, history of COVID-19, and time-location diaries that were combined with geospatial models of fire-related PM2.5. Associations were examined using logistic and mixed-effects logistic regressions.**Results:** PM2.5 exposure predicted higher prevalence of chronic cough and current wheeze 2-3 years post-fire. At the 2022 follow-up, PM2.5 exposure was associated with worsening prevalence of chronic cough and possibly current wheeze. While were no detectable interaction effects between PM2.5 and COVID-19, participants with a history of COVID-19 exhibited more significant associations between PM2.5 exposure and respiratory symptoms.**Conclusion:** Short-term but extreme PM2.5 may increase the long-term prevalence of chronic cough and current wheeze, while COVID-19 may exacerbate the effect on other respiratory symptoms.**Grant Support:** This work was funded by the Victorian Department of Health. |