Research brief

Household air pollution and respiratory symptoms a month before and during the stringent COVID-19 lockdown levels 5 and 4 in South Africa

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https://doi.org/10.17159/caj/2022/32/1.13822

In March 2020, the South African government declared a National State of Emergency as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) also known as coronavirus disease (COVID-19) pandemic threatened the lives of South Africans. A National Lockdown comprising five Levels was developed and implemented starting with Level 5 for 'high COVID-19 spread with low health system readiness'. Level 5 meant employees working in non-essential services and schoolchildren stayed in their dwellings with limited movement (essential supplies only).

With people spending majority of their time in their dwellings, their exposure to household air pollution (HAP) became reason for concern; especially among people who rely on so-called 'dirty fuels' as their main source of energy for cooking and / or heating. A recently published study by Wright et al. (2022) conducted a retrospective online / telephonic survey to investigate fuel use behaviours / patterns of use affecting HAP exposure and associated HAP-related respiratory health outcomes a month before and during Lockdown Levels 5 and 4, i.e., the two most stringent levels. Participants were drawn from an existing market research company panel (since field campaigns were not possible) from Gauteng, Western Cape, KwaZulu-Natal and Eastern Cape where COVID-19 cases were highest at the time of study planning.

Among 2 505 participants (72% Black African, 12% Coloured, 4% Indian/Asian and 12% White) electricity was the main energy source for heating and cooking before and during Lockdown Levels 5 and 4. Some households used less electricity and a few switched to 'dirty fuels' during Lockdown Levels 5 and 4. Unfortunately, due to the reliance on online survey questionnaires, majority of participants were from middle-to-high income groups. Fewer participants (n=250) from lower socio-economic groups were contacted by telephone to complete the questionnaire due to cost.

The prevalence of HAP-related respiratory health outcomes like wheeze, wet cough, hay fever, and shortness of breath was similar and relatively low (< 10%) before and during Lockdown Levels 5 and 4, except for dry cough (16% before; 12% after). Recall bias may have influenced these results. Most participants reported that they were cleaning more, cooking more and spending more time indoors during Lockdown Levels 5 and 4. Our most concerning finding was that one-third of participants reported presence of environmental tobacco smoke (ETS, including smoke/vape) in the dwelling (Figure 1). ETS is a form of HAP and is associated with adverse health effects, especially among children under 5 years of age. It can contribute to middle

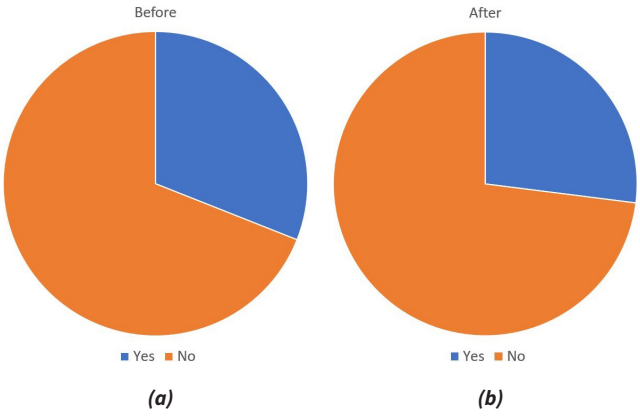

Figure 1: *Prescence of ETS (smoke/vape) in dwelling a) a month before and b) during Lockdown Levels 5 and 4. There was a 4% decline in presence of ETS in the home during Lockdown Levels 5 and 4 compared to one month before Lockdown began.*

ear disease, asthma, bronchiolitis and impaired pulmonary function among others (Hwang et al., 2012).

These are important findings for public health should South Africa return to Lockdown Levels that restrict movement and keep people and children at home indoors the majority of the time. Recommendations are needed to raise awareness about HAP, especially ETS, including how to avoid or reduce HAP to prevent associated human health impacts.

References

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Wright CY, Kapwata T, Abdelatif N, Batini C, Wernecke B, Kunene Z, Millar DA, Mathee A, Street R, Panchal R, Hansell A, Cordell R, Vande Hey J. Household Air Pollution and Respiratory Symptoms a Month Before and During the Stringent COVID-19 Lockdown Levels 5 and 4 in South Africa. Annals of Global Health. 2022; 88(1): 3, 1–12. https://doi.org/10.5334/aogh.3465