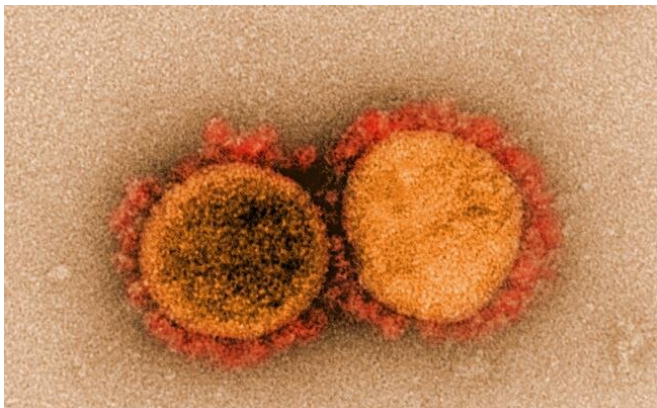


Considerable gap in evidence around whether portable air filters reduce the incidence of COVID-19

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Transmission electron micrograph of SARS-CoV-2 virus particles, isolated from a patient. Image captured and color-enhanced at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland. Credit: NIAID

There is an important absence of evidence regarding the effectiveness of a potentially cost-efficient intervention to prevent indoor transmission of respiratory infections, including COVID-19, warns a study by researchers at the University of Bristol.

Respiratory infections such as coughs, colds, and influenza, are common in all age groups, and can be either viral or bacterial. Bacteria and viruses can become airborne via talking, coughing or sneezing. The current global [coronavirus](#) (COVID-19) pandemic is also spread primarily by [airborne droplets](#), and to date has led to over three million deaths worldwide.

Controlling how we acquire and transmit respiratory infections is of huge importance, particularly within indoor environments such as [care homes](#), households, schools/day care, office buildings and hospitals where people are in close

contact. Several manufacturers of portable air filters have claimed their products remove potentially harmful bacteria and viruses from [indoor air](#), including COVID-19 viral particles. However, there is often no detailed evidence provided on their websites to corroborate their claims for potential consumers to review before purchasing.

A team of UK researchers from the University of Bristol reviewed previous studies to investigate whether portable air filters used in any indoor setting can reduce incidence of respiratory infections and thus, whether there is any evidence to recommend their use in these settings to reduce the spread of COVID-19 and other respiratory infections. The team also explored whether portable air filters in indoor settings capture airborne bacteria and viruses within them, and if so, what specifically is captured.

The researchers found no studies investigating the effects of portable, commercially available air filters on the incidence of respiratory infections in any indoor community setting. Two studies reported removal or capture of airborne bacteria in indoor settings (an office and emergency room), demonstrating that the filters did capture airborne bacteria and reduced the amount of airborne [bacteria](#) in the air. Neither tested for the presence of viruses in the filters, nor a reduction in viral particles in the air.

The study, funded by Professor Alastair Hay's National Institute for Health Research Senior Investigator Award and published in PLoS One, was a systematic review of studies published after 2000 reporting (i) effects of portable air filters on incidence of [respiratory infection](#), or (ii) whether filters capture and/or remove aerosolised [bacteria](#) and viruses from the air, including information of what is captured. Studies reporting non-portable air

filters were excluded from this study.

Lead author, Dr. Ashley Hammond, an Infectious Disease Epidemiologist at the Centre for Academic Primary Care, University of Bristol, said: "Our study highlights the considerable gap in evidence related to the effectiveness of portable air filters in preventing respiratory infections, including COVID-19. Whilst we found some evidence suggesting use of air filters could theoretically contribute to reducing the spread of COVID-19 and other respiratory infections by capturing airborne particles, there is a complete absence of evidence as to whether they actually reduce the incidence of these infections."

Professor Alastair Hay, a GP and Professor of Primary Care at the Centre for Academic Primary Care, University of Bristol, and the research group lead, said: "Randomised controlled trials are urgently needed to demonstrate the effects of portable air filters on incidence of respiratory infections, including COVID-19. The main research questions should focus primarily on whether use of portable air filters in any indoor environment can reduce respiratory infections compared to those environments without portable air filters."

More information: Should homes and workplaces purchase portable air filters to reduce the transmission of SARS-CoV-2 and other respiratory infections? A systematic review by Ashley Hammond, Tanzeela Khalid, Hannah V Thornton, Claire A Woodall and Alastair D Hay. *PLOS ONE*, 29 April 2021.

Provided by University of Bristol

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