

# Face shields don't give high-level COVID protection, study shows

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Credit: Unsplash/CC0 Public Domain

If you wore a face shield during the pandemic, it probably didn't give you a high level of protection against COVID, according to new research from the University of East Anglia.

A study published today compared 13 styles of [face shield](#) in controlled laboratory settings.

While all the face shields provided some [protection](#), none gave high levels of protection against external [droplets](#).

As well as studying face shields in the lab, the research team surveyed people including health workers in middle income countries (Brazil and Nigeria) about their views on face shields as PPE.

Prof. Paul Hunter, from UEA's Norwich Medical School, said, "Face shields have been popular because they don't hinder breathing, they allow more natural communication than face masks and they provide splash protection.

"They were widely used through the COVID pandemic. But until now there hasn't been a great deal of evidence about how protective they really are—particularly taking into account how people use them in the real world, and especially in poorer parts of the world.

"We wanted to find out more about how protective different styles of face shields might be, both in the lab and in real world settings."

UEA researchers collaborated with staff at the Health and Safety Executive (HSE), Britain's regulator for workplace health and safety, who tested 13 face shield designs in a controlled laboratory setting, using a "coughing machine" that ejected fluorescent drops onto mannequin heads.

How much the mannequin face was contaminated by the simulated cough droplets was graded from most to least.

Dr. Julii Brainard, from UEA's Norwich Medical School, said, "The lab

tests showed that all of the face shields provided some protection, but none gave high levels of protection against external droplet contamination. The level of protection provided was influenced by design features, as well as which way the mannequin had its head turned when it was 'coughed' at.

"We found that large gaps around the sides, and sometimes the bottom or top, allow respiratory droplets from other people to get to the face and this means exposure to possible viruses.

"The shields that offered most protection were closed across the forehead and extended well around the sides of the face and below the chin.

"It's important to know that the lab experiments are in the scenario of someone actively coughing at the shield wearer from close proximity. But the chances of droplets getting around the shield onto the face from just speaking are much lower."

To learn more about how face shields are used in a real world setting, the team surveyed more than 600 people across Nigeria and Brazil, including health care staff.

Dr. Brainard said, "We wanted to know about how users cleaned them, and the things that mattered most when choosing facial PPE during the pandemic.

"Not surprisingly, we found that people want proven protective products that are comfortable, stable on their head, easy to clean and that don't look strange.

"This study is important because acceptability of facial PPE during the [pandemic](#) has been mostly studied in richer countries like the UK or

U.S. The participants in our study were in Nigeria and Brazil and we shouldn't assume that people in all countries view facial PPE in the same way.

"It is also important to understand what design features in face shields could be more or less protective, so that people are able to choose the most effective designs.

"Finally, we wanted to know how people cleaned reusable face shields—methylated or surgical spirits were popular, for instance, but so was plain water and soap. Some cleaning chemicals could be incompatible with shield coatings intended to prevent fogging or facilitate quick drying, for instance. Dust outside and fogging inside shields were occasional problems, too," she added.

A mixed methods study on effectiveness and appropriateness of face shield use as COVID-19 PPE in middle income countries' is published in the journal *American Journal of Infection Control* on July 28, 2022.

In a related project, the HSE team tested face shields available for use in the UK. The results of this work, together with more details of the cough simulator, are published in the journal *Annals of Work Exposures and Health*.

Dr. Brian Crook, a microbiologist in the HSE team, said, "It is important that people using any type of PPE to protect themselves from infection know how effective it is, but also it's limitations. We are working with an international standards committee to write guidance towards a better means of providing that information."

**More information:** A mixed methods study on effectiveness and appropriateness of face shield use as COVID-19 PPE in middle income countries, *American Journal of Infection Control* (2022).

Provided by University of East Anglia

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