

Face coverings have little utility for young school aged children

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The use of face coverings and masks have been one of the most visible and contentious interventions for the prevention of SARS-CoV-2 transmission during the COVID-19 pandemic. Yet to date there have been few high-quality studies published evaluating their real-world effectiveness. This may help to explain the significant variation in their application to children and young people, including in educational settings.

Northern European countries such as Sweden and Norway have not advised or mandated them at all. The UK and Denmark only required them for children aged 12 years and older for limited periods. In contrast, other Western European countries such as Spain, France, Germany and Italy mandated them for children aged 5 and over and in North America, children as young as 2 years old have been required to wear facemasks in educational and childcare settings, with this requirement at times outlasting their requirement in adults (1). Notably, the World Health Organisation (WHO) and UNICEF advises that children aged 5 years and under should not wear masks routinely. They also recommend that children between the age of 6 and 11 wear masks only under specific indoor circumstances where SARS-CoV-2 is spreading. Amongst children aged 12 and older mask use is recommended to be the same as for adults (2).

Even among adult populations, there remains much controversy over the utility and effect size of different types of masks in different community settings. As we approach the third anniversary of the emergence of SARS-CoV-2, there remain only 2 randomised trials of face coverings. The DANMASK study (3) found no significant effect, but due to its design only assessed masks as personal protection (not source control) and was underpowered to detect small differences. A trial from Bangladesh found that a community intervention combining education and mask use may have helped reduced transmission between 0 and 18%, although the effect may have been limited to surgical masks in older populations (4).

With a paucity of intervention trials, we rely on observational evidence to help inform us. Many observational studies have been conducted, but their results have been conflicting and are subject to significant biases, predominantly due to systematic differences in the people or regions who have opted into mask wearing including differing associated testing policies (5). For example, a study from Boutzoukas et al (6) in the USA found that optional school masking was associated with a 3.6 times higher rate of infection than universal masking districts, however contact tracing guidance for the regions defines close contacts for testing differently depending on whether the index case and contacts were masked. A similar bias is present in a recent pre-print from Boston where-by the need to test close contacts of Covid-19 cases was exempt if they were wearing masks (7). These are

examples of detection of the outcome (COVID-19 cases) being differentially conditioned on the exposure (mask wearing). These explicit biases which systematically impact testing behaviour and case ascertainment cannot be adjusted for. This is before considering often non-explicit and unknown differences in human behaviour, or coinciding changes in other interventions which may be influenced in changes to mask wearing policy between institutions.

A new, elegantly designed, quasi-experimental study from Catalonia, Spain, by Coma et al (8) helps to shed light on the efficacy of masks for younger, school aged children in educational settings. The benefit of this study design is that unlike other observational studies, the settings in which masks are utilised differ only in the age of the children; those in the first year of primary school wearing face coverings and those in the last year of pre-school do not. Pre-schools in Catalonia operate within the same buildings as primary education and their schedules are similar, so the age of the children and presence of face masks should be the only important differences between these 2 cohorts. In contrast to other observational studies of mask wearing regional and institutional differences are therefore controlled for. That this study shows no significant difference in rates of transmission of SARS-CoV-2 between these two groups of similarly aged but masked vs unmasked children suggests that face coverings do not meaningfully reduce transmission in this setting.

Whilst there is much laboratory evidence on the efficacy of masks on blocking spread of aerosols, there are many situations in medicine and public health where mechanistically successful interventions fail when subjected to human behaviour. Fit, type and compliance are likely to be vital to the efficacy of masks. When worn by young children of varying sizes, poorly fitted masks worn under chins and noses are a common sight. Furthermore, masks must be removed to eat and drink; a highly social setting which may represent a high risk of transmission. There are therefore many opportunities for laboratory effectiveness of face coverings to be eroded, so it is perhaps unsurprising, if disappointing, that their implementation failed to demonstrate benefit in this study.

This is of particular significance due to the potential harms associated with prolonged face covering, which are likely to disproportionately impact both younger children and children with disabilities. Students and teachers have widely reported that masks impede communication in the classroom (9); an additional unwelcome barrier during a time where learning has already been impeded to an unprecedented extent (10). Covering faces impedes the understanding of emotions (11), and there are emerging reports from settings where masks have been mandated for very young children of significant impediments to speech and language development and increases in referrals to speech and language services (12) which themselves are at times impeded by combinations of face-coverings for the child, practitioner and delivery by videocalls.

Overall, given that the real-world benefits of masking young children in educational settings appear to be limited it seems likely that any modest benefits are outweighed by the aggregation of harms, especially as these accrue over prolonged periods of time.

As autumn and winter approach, most countries in the northern hemisphere anticipate having to manage a heavy burden of COVID-19. Schools, as high-profile settings over which public policy has a considerable control, may be tempting places for policy makers to impose additional measures. For a group who have sacrificed so much already, despite being themselves at the lowest risk of adverse outcomes from infection, it is important to ensure a disproportionate burden is not placed on them any longer. Given the latest evidence suggests that face coverings have little utility in young children in schools and pre-schools, alternatives to school and pre-school masking ought to be prioritised.

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