

LETTER

COVID-19: we need randomised trials of school closures

One of the most controversial and radical societal interventions to curb the COVID-19 epidemic is the closing of schools and nurseries. There seems to be broad agreement that the effect this will have on the spread of the virus is uncertain, and the negative implications are obvious. Economic costs are high when parents must stay at home to take care of their children and cannot work¹ for children, and social isolation and the impact on learning are key concerns, especially if school closures are long-lasting.

Empirical evidence on the effect of school closures stems from observations during influenza epidemics.^{2,3} Systematic reviews have not identified any randomised trials, but observational data indicate that school closures reduce the spread of influenza.^{2,3} However, while children play an important role in transmitting influenza viruses, the available data seem to show that their role may be smaller in the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): relatively few children have tested positive, and children are mildly affected compared to adults,^{4,5} which is likely to mean that they are also less infectious.⁶ The facts that there are few documented cases of children as sources of transmission and no reports of outbreaks among children in schools or nurseries support the inference that children play a smaller role in the spread of SARS-CoV-2 than influenza.

From a 'better safe than sorry' perspective, school closures make sense. This is probably why most governments decided to close their schools.⁷ Interestingly, neighbouring and largely similar countries in Scandinavia have opted for different approaches: while Denmark and Norway implemented school closures, Sweden did not.⁸ Finland chose a middle way, allowing the youngest children to go to school, while urging they stay home.⁹

The decisions on whether to close schools were probably difficult to make, given the lack of robust evidence. Deciding when to reopen schools and nurseries will be just as challenging. At the time of writing, no government in Europe has announced when they will reopen schools fully. The Norwegian Prime Minister Erna Solberg declared on March 24 that schools will remain closed at least until April 13¹⁰—

many believed they will remain closed over the summer, if not longer.

Given that the pandemic is likely to last into 2021, the question of when to reopen schools will remain a contentious one. The public is probably just as ambivalent about closed schools as the authorities are, and there is—presumably—a demand for reliable information to inform a decision about reopening.

As for any question about benefits and harms of interventions, the standard approach is to conduct a randomised trial—if possible. In Norway, we could do this by randomising schools in Norway's 356 municipalities. A study period of 1 month should be sufficient to detect important differences in incidence of cases with COVID-19, though this needs further assessment due to the constantly changing circumstances. Harmful effects, for example, psychological outcomes, school performance and parental income, are important outcomes to include.

A technical challenge is statistical power, since it may be politically or practically impossible to conduct a trial of adequate duration if COVID-19 incidence is low. It would therefore be helpful if several countries or states ran similar trials, ideally using compatible outcomes to facilitate evidence synthesis. To facilitate such collaboration, we publish our study protocol for a cluster-randomised trial of school reopening, with this article (online supplemental material 1).

The results of this and similar trials would inform policymakers about when or whether to reopen schools under the current COVID-19 epidemic and would constitute an important part of the evidence base for decisions about school closures in future epidemics.

Whether a national experiment in Norway is feasible remains to be seen. A prerequisite is that there is sincere doubt among decision makers and experts alike that reopening schools is the right thing to do.

With a skyrocketing unemployment rate and a halted economy, questions have been raised about whether the current drastic measures are justified.¹¹ The largest business association in Norway, the Confederation of Norwegian Enterprises, recently asked the government to reopen nurseries and allow people to get back to work.¹² Doctors report that the number of children admitted to hospital under suspicion of abuse has plummeted, and they express a deep concern for children in distress, that teachers normally would have notified the child welfare services about.¹³

So far, the focus has mainly been on the need to minimise the direct negative

impact of the pandemic, and many are willing to pay a high price to succeed in that, at least in terms of economic costs. A recent modelling exercise by French researchers demonstrated the potential that may lie in closing down schools: they found that in combination with one in four adults working from home, '8 weeks of school closure would be enough to delay the peak of almost 2 months with approximately 40% reduction of the incidence at the peak'.¹⁴ For most countries, this would likely translate into a substantial number of lives saved, and could balance out the downsides. Two key assumptions for the calculation were that children are 80% less susceptible to COVID-19 infection than adults are, and 50% less infectious. However, there are large uncertainties about these assumptions, since there are no reliable estimates. If children rarely infect others, school closures are clearly doing more harm than good.

In a situation where it is unclear what the best option is—what clinical researchers refer to as 'equipoise'—running a trial is the ethically sound alternative.

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