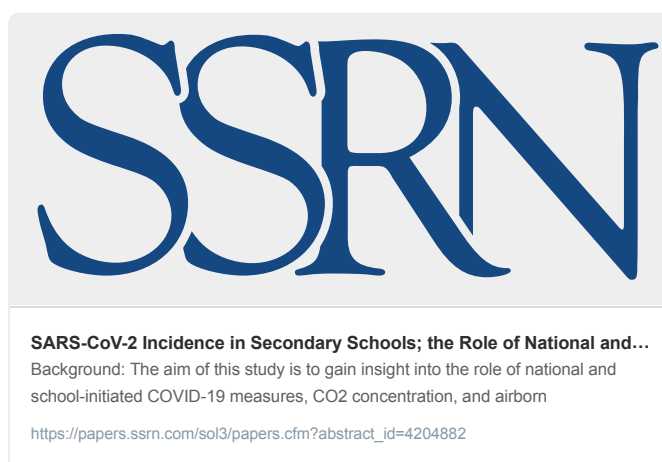




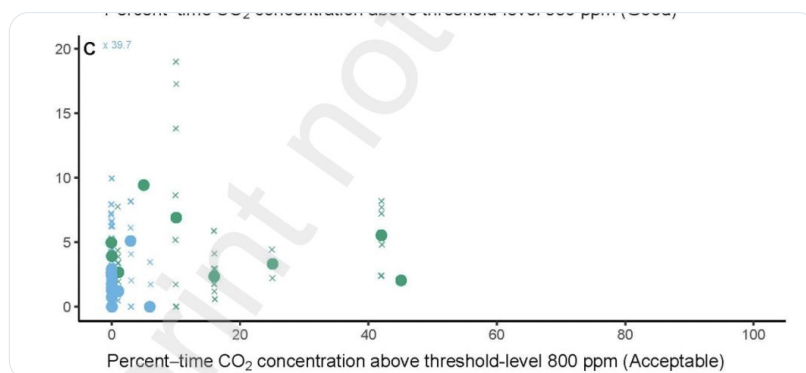
Dr. Deepti Gurdasani @dgurdasani1

Sep 28 · 17 tweets · [dgurdasani1/status/1575225241470906369](https://twitter.com/dgurdasani1/status/1575225241470906369)

Just a note about the paper that's being widely shared as 'ventilation making no difference' to school transmission & transmission being 'close contact' mostly. This is really misleading, and there are many problems with these conclusions. 🧵



1) This study is massively underpowered to detect any effect of ventilation, given that most schools had CO2 levels below 800ppm in this study (perhaps because it was being monitored & ventilation was good?). So v. few datapoints with lots of time spent the above 800ppm



What people are describing as 'no effect' is essentially an effect of 1.46x (95% confidence intervals - 0.76-2.81) increase in risk for >10% time spent above 800ppm. The increase in risk for poor ventilation could be as high as 2.8x or could be nothing.

Table 4. Crude and adjusted IRRs of the association between percent-time the difference between indoor and outdoor CO₂ concentrations exceeded the threshold of 800 ppm (Acceptable) and SARS-CoV-2 incidence within schools

	Crude IRR (95%CI)	Adjusted* IRR (95%CI)
Pre-lockdown‡ Percent-time CO ₂ concentration exceeds threshold		
400 ppm	1.04 (0.97-1.12)†	1.08 (1.00-1.16)†
550 ppm	1.05 (0.97-1.14)†	1.10 (1.02-1.19)†
800 ppm	1.04 (0.96-1.14)†	1.08 (0.95-1.22)†
800 ppm < 10% time	reference	reference
800 ppm ≥ 10% time	1.42 (0.82-2.47)	1.46 (0.76- 2.81)
Post-lockdown‡ Percent-time CO ₂ concentration exceeds threshold		
400 ppm	1.01 (0.88-1.16)†	1.02 (0.87-1.20)†
550 ppm	0.88 (0.69-1.12)†	0.89 (0.68-1.15)†

We can't say because the study is *massively* underpowered to tell us whether ventilation makes a difference. But the central estimate actually suggests it may make a substantial difference, but uncertainty is very high because of the very few samples with poor ventilation.

The authors actually say this very clearly in the limitations, which seems to have been completely lost in messaging from some experts who have minimised the role children play in transmission throughout the pandemic.

limitations should be addressed: first, reporting on SARS-CoV-2 infections to schools may have been incomplete and resulted in underestimation of the actual incidence. Second, detailed information about the location of transmission (in or outside school environment) could not be obtained. Third, the sample size in this study was not sufficient to determine statistical significance of small effect sizes. Fourth, CO₂ concentration was only measured for one or two days during the study period in a selection of classrooms per school, and thus might not be representative for the entire study period and school. However, we selected the classrooms and days to represent the different ventilation regimes covering within school variation during routine use and adjusted for outside CO₂ concentrations. During the study period, there was additional attention for optimal ventilation and windows and doors of classrooms were frequently open. Our results can therefore not be extrapolated to conditions where this does not apply. If doors and windows were closed more often, this would probably have resulted in CO₂ thresholds being exceeded more frequently.

2) The only period of full attendance examined in the study was Oct-Dec 2020 (pre-delta), and the remaining periods examined had between 20-50% attendance only- so not generalisable, because we know mitigations like reduced class sizes will massively reduce risk.

3) Misclassification of exposure is also a major limitation- this would bias results to near the null by introducing noise. Essentially, CO₂ levels were measured for 1-2 days & not throughout, so may not reflect the whole period.

4) The study depends on ascertaining cases in children based on symptom-based testing, as most studies have done- and we know this hugely underestimates infection in children. Again, the authors acknowledge this very important limitation.

Outbreaks in schools are often missed because of silent spreading. If we just compare UKHSA data in England to ONS data, it shows ascertainment of cases is *much* lower in children compared with adults. Again, this biases study results towards the null.

Paul Mainwood
@PaulMainwood · Follow

With ONS publishing by-year-of-age prevalence estimates, we can update our picture of how ascertainment has changed (i.e., what share of infections we pick up in daily testing). With a 14-day detectability window assumption, it's down at 6%, compared to ~50% this time last year.

12:14 PM · Sep 23, 2022

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5) So the major part of the study when attendance was full is in the early pandemic- pre-delta - and a period when there was focus on ventilation, physical distancing, test, trace + quarantine. None of which represent anything near what we have now, or even a year ago.

6) Now let's talk about air sampling- the idea that because SARS-CoV-2 wasn't detected in settled dust samples (I've no idea how good these are for sampling, but SARS-CoV-2 and other airborne viruses are notoriously difficult to detect in the air!) -transmission is close contact

I'll leave others more knowledgeable than me to comment on collecting settled dust in bags, and waiting for 4 weeks to test for virus - but let me talk about what we actually know about epidemiological outbreak assessment in schools- from tracing & genomic surveillance

We know airborne spread is rife in schools & other environments, because we have *so many* studies of superspreading in different scenarios- crowded indoor environments that show outbreaks spanning long distances & rapidly spreading outbreaks in schools involving large numbers.

So you can look at the epidemiological evidence directly which shows clear evidence of airborne transmission. Unlike what the paper says, this really isn't up for debate. And epidemiological evidence here trumps inability to find virus in air which is pretty hard to detect anyway

So we can't reverse everything we've learned in the past 2.5 years about airborne transmission based on this!!! This study unfortunately doesn't show us anything, except that underpowered research shouldn't be overinterpreted...

Again, many of us would have to spend far less time 'debunking' these claims if 'experts' didn't make them - based on evidence that they can't make them from. At the very least read the paper before you make claims!

And to the 'I'm just sharing without making claims' while quoting the study on 'close contact' being the predominant mode of transmission - you are fully complicit in putting out misleading information - because you can't actually infer this from the study!

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