



Letter

Beware of regional heterogeneity when assessing the role of schools in the SARS-CoV-2 second wave in Italy—Authors' reply.

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Bignami et al [1] criticize the conclusions of our study [2], confirmed in other countries [3], because they claim that in some Italian regions incidence among high school students rose before other age classes, implying a causal role for this regional increase in incidence in the second COVID-19 wave in Italy. We contend that because their analysis is formally incorrect, it does not impact on our conclusions and even reinforces them. First, because of different testing rates in different community settings, the impact of school opening/closure on the dynamic of the Covid-19 epidemic cannot be simply estimated from prospective analyses of age-stratified Covid-19 incidence [1]. Proper estimates of the effects of school opening/closures or other non-pharmaceutical interventions conversely rely on the analysis of their effect on SARS-CoV-2 reproduction number, as in our study. Second, contrary to what stated by Bignami et al. [1], we clearly nominate the 3 Italian regions where incidence is considerably (>25%) higher among 14–18 years old students than in the general population. Nonetheless, at the national level, incidence was 9% lower among high school students than in the general Italian population. Third, Bignami et al. [1] omit to comment that incidence among students <14 years old is lower than in the general population in all Italian Regions but Lazio [2]. Fourth, in the analysis by the Italian Epidemiological

Association cited by Bignami et al. [1], incidence among high school students increased after, or concomitantly to older age classes [4] in all the mentioned regions but Piedmont and Marche, at a difference from what stated by Bignami et al. Even in the cited report by the Italian Istituto Superiore di Sanità [1], the earliest increase in incidence is observed among 20–29 years old individuals, not high school students (Figure 24 in [5]). Finally, from a methodological point of view a causality tests or cross correlation analyses are needed to substantiate the assumption [1] that the increase in incidence among high school students led to the second COVID-19 wave. Indeed, a systematic CDC review outlines that with in-person learning, national COVID-19 incidence rates among children and adolescents rose over time, but this incidence increase did not pre-date community transmission [6]. Thus, when appropriate methods are used and crucial data are not ignored from the interpretation of regional and national perspective analyses, the lack of association between school opening and the second COVID-19 wave in Italy stays supported.

Contributors

SG and LS conceived and wrote the initial draft. SG, FC, and LS contributed to the first version. All authors edited the final version.

Declaration of interests

No interests to declare.

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