## PEER REVIEW HISTORY



## ARTICLE DETAILS

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| **TITLE (PROVISIONAL)** | Study protocol for monitoring SARS-CoV-2 infection and its determinants in Catalonia (Spain): an observational and participatory research approach in a Sentinel Network of Schools. |
| **AUTHORS** | Bordas, Anna; Soriano-Arandes, Antoni; Subirana, Maria; Malagrida, Rosina; Reyes-Urueña, Juliana; Folch, C; Soler-Palacin, Pere; Gascón, Mireia; Sunyer, Jordi; Anton, Andres; Blanco, Ignacio; Fernández-Morales, Jessica; Colom-Cadena, Andreu; Sentís, Alexis; Pumarola, Tomas; Basora, Josep; Casabona, Jordi |

## VERSION 1 – REVIEW

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| **REVIEWER** | López-Bueno, Rubén<br>University of Zaragoza |
| **REVIEW RETURNED** | 20-Sep-2021 |

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| **GENERAL COMMENTS** | This is an interesting study protocol dealing with a timely topic. Indeed, more research on children and COVID-19 transmission in schools is required. Overall, it is well-written, although some points might be improved to increase the quality of the protocol.<br>Introduction<br>-Authors should better revise literature on the topic to better depict the situation. On the one hand there is the proven effectiveness of school closures when it comes to tackling COVID-19. On the other hand, there is the downside which might imply health-related and fitness worsening in both children and adolescents, which has been also observed in Spain. In both cases there are critical studies that should be mentioned to better reflect the state of the art.<br>Methods and analysis<br>-The main concern of your study is the potential selection bias. There is the selection bias regarding schools but also students and staff within these schools. My view is that you are really optimistic forecasting a 70% participation rate. Those students and families less aware of public health issues might refuse to participate.<br>-Accounting for reinfections, effects of the vaccine and remaining symptoms of the disease are worth collecting.<br>-Some information on statistic analyses that you might conduct is desirable. |

**VERSION 1 – AUTHOR RESPONSE**

Reviewer: 1. Dr. Rubén López-Bueno, University of Zaragoza
Comments to the Author:
This is an interesting study protocol dealing with a timely topic. Indeed, more research on children and COVID-19 transmission in schools is required. Overall, it is well-written, although some points might be improved to increase the quality of the protocol.
Introduction
- Authors should better revise literature on the topic to better depict the situation. On the one hand, there is the proven effectiveness of school closures when it comes to tackling COVID-19. On the other hand, there is the downside, which might imply health-related and fitness worsening in both children and adolescents, which has been also observed in Spain. In both cases, there are critical studies that should be mentioned to better reflect the state of the art.

Thank you for your suggestions. New references have been included on 'Introduction' section in the revised manuscript to better reflect the negative impact in mental and physic health of school closures in children and adolescents. As many studies reported, we tried to show the controversial effectiveness of school closures as a prevention of COVID-19 transmission. There is relevant literature concluding that the partial or full reopening of primary and secondary schools was not relevant in terms of SARS-CoV-2 infection rates (Ladhani S, et al., Lancet Child, 2021; Macartney K, et al., Lancet Child Adolesc Health, 2020; Kuehn BM, JAMA, 2021). These studies show that the transmission could be controlled with other non-pharmacological prevention measures such as clustering the pupils in bubble groups, proper ventilation or wearing facemasks. Moreover, an English cluster-randomized trial founded that testing for contacts of individuals with SARS-CoV-2 infection in secondary schools was non-inferior to 10-days isolation of contacts in terms of control of COVID-19 transmission (Bernadette C Young, The Lancet, 2021). For all these reasons, we added literature regarding this topic in the revised manuscript.

Methods and analysis
- The main concern of your study is the potential selection bias. There is the selection bias regarding schools but also students and staff within these schools. My view is that you are really optimistic forecasting a 70% participation rate. Those students and families less aware of public health issues might refuse to participate.

Because we were aware of the potential school selection bias, we have used diverse inclusion criteria to represent schools with different characteristics. The inclusion criteria included schools with different socioeconomic characteristics, schools located in rural or urban areas, different school structure such as public, chartered and private schools and also we took into account tertiles of SARS-CoV-2 incidence when we choose them, as can be read on the 'Study design and setting' section. In addition, to address this selection bias risk, we will compare the study results with the ecological data collected from all schools among Catalonia in terms of prevalence and incidence (AQuAS source).

On the other hand, the authors agree with the suggestions of the reviewer and the range of 50-70% for forecasting in the revised manuscript has been included (line 397). We agree that the perentage of participation in a normal situation would be far lower than our forecast of 70%, as the awareness of the importance of public health issues among students and families is not as high and also, there are other barriers such as language and socio-economic status. However, we have forecasted a high participation due to the following characteristics of this project:

- It is an order of two Ministries of the regional government "Government of Catalonia (Spain)": Ministries of Health and Education
- It is focused on the pandemic which is a scientific and social challenge

- The project highlights the compromise of elaborating recommendations to improve the prevention and control measures in the school environment altogether with educational community.
- It promotes scientific competencies combined with communication and participation competencies, facilitating the interaction between students, families, public health policy makers and researchers.
- It is an opportunity to improve science education and the students' and families' perception towards science and scientific careers and to promote responsible citizenship towards local socio-scientific challenges.

- Accounting for reinfections, effects of the vaccine and remaining symptoms of the disease are worth collecting.

Thank you for your suggestion, we have introduced your suggested variables in the questionnaire that will be collected twice yearly during this school year placed at the SARS-CoV-2 infection section and vaccination data. The new variables have been included in the revised manuscript in the corresponding section of 'Methods and Analysis'.

- Some information on statistical analyses that you might conduct is desirable.

We have revised the Data analysis plan with the statistical team and all the statistical analyses that we are planning to conduct are reflected in detail according to the data that will be collected during the continuation of the study. The details of methodology are described in 'Methods and Analysis' section under the subtitle: Data analysis plan and sample size.

We very much appreciate your comments and the Reviewers' suggestions and interesting recommendations because they have helped to improve our manuscript. I hope that you can now find this revised version suitable for publication in BMJ open. However, if you have any further queries, please do not hesitate to contact us.

**VERSION 2 – REVIEW**

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| **REVIEWER** | López-Bueno, Rubén<br>University of Zaragoza |
| **REVIEW RETURNED** | 03-Dec-2021 |

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| **GENERAL COMMENTS** | The authors addressed well my queries. |