

Comments on: “Impact of the COVID-19 pandemic on pediatric bacterial infection rates: a population-based study”

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To the Editor,

We have read with great interest the article, “Impact of COVID-19 pandemic on pediatric bacterial infection rates: a population-based study” by Pilotto et al., published in *Acta Biomedica* 2025; 96(3). In this study, the authors have highlighted the increased incidence of different bacterial infections in children in the period after COVID-19 pandemic. They have concluded that the non-pharmacological measures taken during the pandemic served as a double-edged sword as the resulting delayed immune maturity might have increased the susceptibility of many viral and invasive bacterial infections (1). While it's a very important study that is clinically and timely relevant, there are certain limitations that we would like to underscore.

First, the study has been conducted in a single center, in a third-level pediatric hospital in Italy. Therefore, there is a lack of generalizability. It may not reflect the pattern of infections in the entire population (2). If a multi-center approach had been followed, it would yield more generalized results indicative of the entire population.

The study compares the infection rates of two groups, the first one comprising the patients from October to April of pre-COVID era (2018-19) and the second one from October to April of post-COVID era (2022-23) and includes 879 children. It fails to provide the trends of infections for all the seasons in a year and doesn't cover the entire pediatric population because of its limited sample size. This would have been overcome

by observing the trends of the entire year and using a large sample size depictive of the whole population.

The study highlights that delayed immune development in children might have occurred because of the reduced exposure to infections during the pandemic owing to non-pharmacological measures. However, it remains a hypothesis because of the lack of substantial evidence provided by immunological investigations. Therefore, the claim should have been more speculative rather than being stated as a fact (3).

Also, the study does not provide the resistance profile of the organisms responsible for causing infections. This information would have been helpful for establishing empirical antibiotic treatment and formulating a public health policy. Similarly, the paper also doesn't provide the comparison of different demographic and clinical features (age, nutritional status, immunization etc.). These factors would have affected the results of the study markedly.

Finally, the paper has mentioned the retrospective bias. But it does not provide any information about selection bias and the bias of missing data (4).

In the end, I would like to highlight that, despite the above-mentioned limitations, it is a very valuable study that provides an insight into the increased incidence of post-pandemic bacterial infections in the pediatric population. However, future studies should follow a multi-centered approach considering the data from the entire year and using a broad sample size. They should also provide immunologic evidence of immunity gap in the post-COVID era and the resistance

profile of the organisms involved. They should consider the comparison between demographic and clinical factors as they can affect the results. Also, the important biases should be acknowledged.

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