


# COVID-19 in children in Odisha state, India: a retrospective review

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## ABSTRACT

We retrospectively analysed the swab samples tested for COVID-19 from 7 March 2020 to 17 August 2021 at the Indian Council of Medical Research-Regional Medical Research Centre, Bhubaneswar, Odisha. 553 763 nasopharyngeal swabs were collected from individuals suspected with COVID-19 in Odisha state. 75 190 (13.6%) samples were positive by reverse transcription-PCR. There were 5988 (8%) cases in children and young people under 18 years old. Odisha reported 996 153 COVID-19 cases which resulted in 6985 deaths in adults and 36 in children and young people under 18 years old.

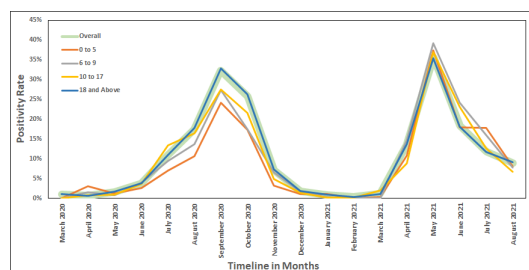
COVID-19 affects children of all ages, but they rarely develop any severe or critical illness.<sup>1</sup> India has been hit by two major waves of the COVID-19 pandemic, with peaks in September 2020 and May 2021.<sup>2</sup> More than 2% of the 44.5 million population of Odisha were diagnosed with COVID-19 infection during this period.

In this study, we retrospectively analysed the swab samples tested from 7 March 2020 to 17 August 2021 at the Indian Council of Medical Research (ICMR)-Regional Medical Research Centre (RMRC), Bhubaneswar, Odisha. RMRC, Bhubaneswar is the first laboratory to start testing COVID-19 samples in the state and has expanded to a network of 64 laboratories during the COVID-19 pandemic. All samples collected according to the ICMR guidelines were included in the study, except

samples which were invalid or inconclusive after testing.

A total of 553 763 reverse transcription (RT)-PCR-tested results were included in the analysis. Among the samples tested, 75 190 (13.6%) were found positive by RT-PCR test according to the guidelines issued by the ICMR, Ministry of Health and Family Welfare, Government of India. Among the positive cases, 69 202 (92%) were from individuals aged  $\geq 18$  years and 5988 (8%) cases belonged to aged 0–17 years. The positivity rate among those aged  $\geq 18$  years (13.8%) was relatively higher than those aged 0–17 years (11.6%) and comparable with the overall positivity (figure 1). Among children, the positivity rate was highest in the 6–9 years age group (12.96%) and lowest among the 0–5 years age group (9.07%). The median age (Q1–Q3) of childhood cases was 13 years (8–15 years) and the median age (Q1–Q3) of cases above 18 years was 35 years (26–48 years) (figure 2).

Our findings demonstrated that the positivity rate among children was less than the adults during the last two COVID-19 waves. The case fatality rates in Odisha state in the 0–17 years age group were 0.05% and 0.03%, respectively, in the first and second waves, which were much lower than the overall case fatality (0.75%). In 2021, 4, 11 and 8 children succumbed to COVID-19 in the age groups 0–6, 7–14 and 15–18 years, respectively, whereas the number of deaths was 3, 6 and 4 in the same age groups in 2020. Based on serosurveillance reports conducted by the ICMR in June 2021, COVID-19 infection in children above 10 years of age occurs in a similar frequency to that of adults. The seroprevalence in the 10–17 years age group and  $\geq 18$  years increased from 27.8% to 61.8% and from 25.8% to 69.69%, respectively, in the third (December 2020–January 2021) and fourth (June–July 2021) serosurvey.<sup>3</sup> None of the children had any comorbidities as per the data collected during sample collection. Fear of mutations causing more



**Figure 1** Positivity rate during various months in various age groups. (I have the permission to use the image as it is created by myself and approved by all coauthors).



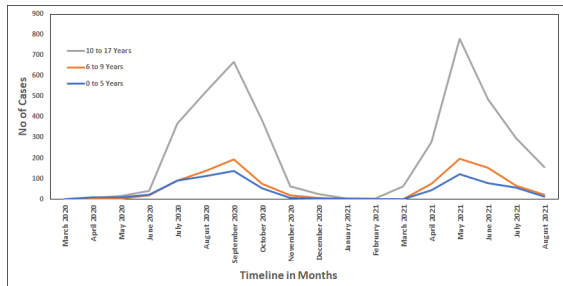
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**Figure 2** Epidemic curve of COVID-19 in children by age group. (I have the permission to use the image as it is created by myself and approved by all coauthors).

severe cases in children has no solid scientific evidence to date. The most successful strategy to return children to schools is to increase vaccine eligibility for children and adolescents while addressing vaccine hesitancy. Immunisation of school teachers and staff is being prioritised to prevent occupational transmission, and there is a gradual emergence of evidence of vaccine effectiveness in adolescents.<sup>4</sup> Even without vaccination, due to the high prevalence of seropositivity, children might incur natural immunity in preventing future infection or complications of COVID-19.<sup>5</sup> An expanding vaccine eligibility for children and adolescents while addressing hesitancy is the most effective strategy in returning children to schools and colleges.<sup>6</sup> The study highlights that presently there is no such concrete evidence to show that children are or would be affected more than adults in the upcoming waves. To address any future upsurge, a collaborative effort from the private and public sectors is the need of the hour.

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