

THE ESTIMATION OF LONG-COVID PREVALENCE AND LONG-TERM PERSISTENCE IN ITALIAN CHILDREN AFTER COVID-19 COMPARED TO UN-INFECTED SUBJECTS: AN ANALYSIS USING A PEDIATRIC PRIMARY CARE DATABASE

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Background: Evidence on the incidence of post COVID-19 conditions in the pediatric population is still limited, mainly due to a marked heterogeneity between studies and a lack of works including a comparison group of children unexposed to SARS-CoV-2.

Aim: To evaluate the **incidence rate and risk for the onset of new post COVID-19 conditions** in a cohort of SARS-CoV-2 exposed and unexposed children and adolescents.

Methods:

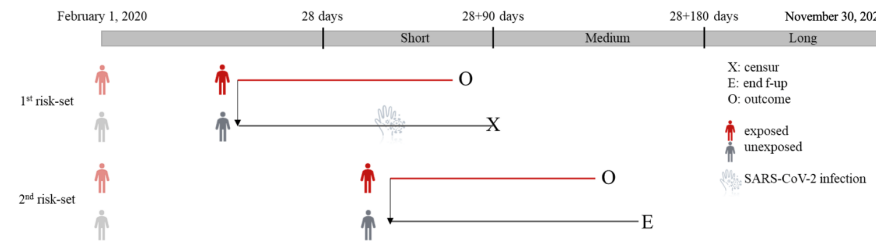
Retrospective nested-cohort study using Pedianet, a comprehensive Italian paediatric primary-care database covering ~12% of the Veneto region pediatric population <15 years of age, linked to the Veneto region COVID-19 swabs and hospitalization registries

Clinical data from previously healthy children diagnosed with COVID-19 (**exposed**) were compared with 1:1 **matched unexposed children** from February 1, 2020 to November 30, 2021 (**Fig.1**)

Incidence rates (IR) of new post COVID-19 conditions were expressed as the number of cases per 100,000 person-months with the appropriate 95% confidence intervals (CI)

Adjusted Hazard ratio (aHR) and 95% CI for the association between exposure to COVID-19 and the onset of new post COVID-19 conditions was estimated using conditional Cox proportional hazard regression.

Fig.1 Time periods, exposure, and matching definitions.



Results:

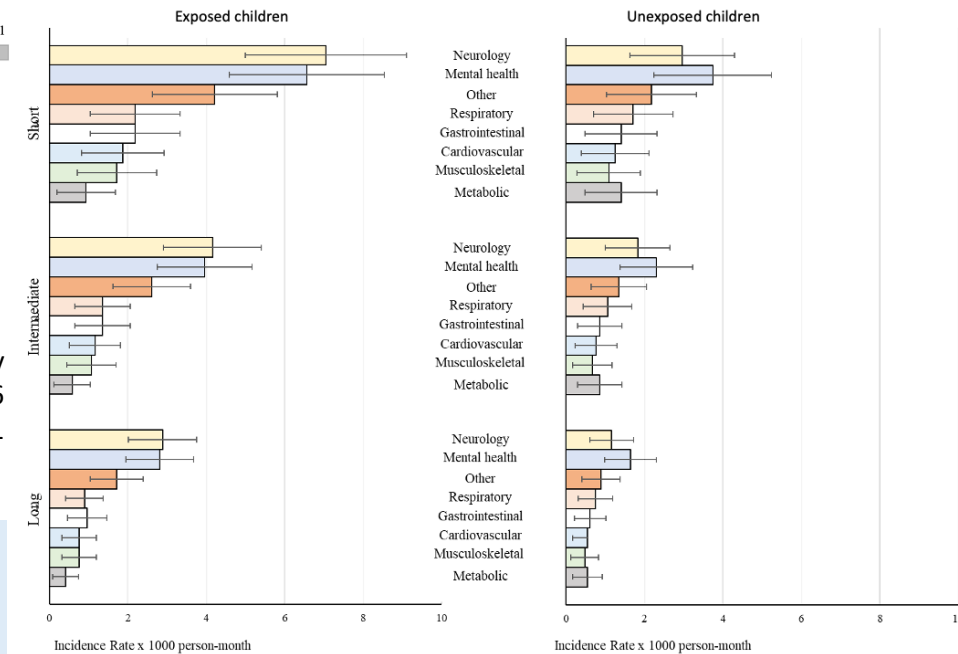
A total of 3312 paediatrician-, age- and sex-matched previously healthy children (including 1656 exposed [34758 person-months] and 1656 unexposed [34330 person-months]) were studied up to a maximum of 21 months after COVID-19 infection.

Exposed children had a significantly higher IR of at least one new conditions after COVID-19 (IR of 10.6 x 100 person-months [95% CI 9.0-12.3]) compared to unexposed children (IR of 6.5 x 1000 person-months [95% CI 5.2 – 7.7]) (p< 0.0001).

Overall, **exposed children** had a significantly higher risk of **mental health disorders** (aHR 1.8, 95% CI 1.1 - 3), **neurological disease** (aHR 2.4, 95% CI 1.4 - 4.1), and other conditions, including **skin rashes and smell and taste alterations** (aHR 2, 95%CI 1 - 3.8) .

The **IR of the onset of new conditions** after COVID-19 infection **declined over** the short, medium, and long term **periods** in exposed and unexposed children (**Fig.2**).

Fig.2 IR and 95%CI of selected condition categories in the 3 timepoints post COVID-19.



Conclusions:

Our findings provide evidence of increased IR and risk of the onset of new conditions after COVID-19 infection in children, especially in the short term period.

Further population-based studies are needed to better describe the incidence of new post COVID-19 conditions due to Omicron variant in the pediatric population, as well as the IR of new conditions post other respiratory viral infections.

Funding: This work is partially supported by ORCHESTRA (grant agreement No 101016167)



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