

BRIEF REPORT

Late paediatric emergency department visits with respiratory infections were not associated with more severe disease during the early COVID-19 pandemic

Many studies have reported late child presentations and/or parental hesitation to access emergency departments during the first few months of the COVID-19 pandemic.^{1,2} Anecdotal reports have suggested that these were associated with increased disease severity in children,³ but this has not been proven.

The aim of this study was to analyse the clinical history, presentation and course of children visiting the paediatric emergency department (PED) of the Ca' Granda Ospedale Policlinico in Milan, Italy, for acute respiratory infections (ARI). We compared the first year of the COVID-19 pandemic in 2020–2021 with the same dates in 2018–2019 and 2019–2020.

Children were eligible to take part in this observational study if they were 1 month to 17 years of age, visited the PED from 9 March 2018 to 8 March 2021 and were diagnosed with an ARI. The median duration of symptoms before PED presentation, the number of children requiring hospital admission and the length of hospitalisation were collected. We also extracted the number of children born preterm and children with chronic diseases that potentially affected the course of their ARI. These included children with chronic respiratory, cardiac and neurological conditions. All the data were retrospectively and anonymously gathered from the patient medical records.

The data are presented as a median and interquartile range [IQR] or as absolute frequencies and percentages. Listwise deletion was used for missing data. As well as analysing the period before and during COVID-19, we also carried out a separate analysis of the three main phases of the first year of the pandemic in Italy. The first wave was from 9 March to 3 May 2020; the recovery phase was from 4 May to 3 November 2020; and the second wave was from 4 November to 8 March 2021. The Mann–Whitney U test and the chi-squared test were used to compare continuous and dichotomous variables, respectively. $p < 0.05$ was significant.

We studied 9546 children: the mean number of subjects was 4180 in the two prepandemic periods, but this number decreased by 72% during the first pandemic year. The type of upper and lower ARIs during the study periods is reported in Table S1.

A significant drop in nonurgent PED visits for ARI was observed during the pandemic period. The overall percentage of hospital

admissions remained similar, at just over 7%, even though the actual number fell dramatically (Table S2).

The percentage of PED patients who were hospitalised was twice as high during the first wave of the pandemic than during the same periods in 2018–2020 (Table 1). The median and interquartile (IQR) days of symptoms before PED presentation were longer ($p < 0.05$) during the first wave than the prepandemic period, at 3 (1–5) days vs. 1 (1–3) days, respectively. However, the median (IQR) length of hospitalisation was similar between the two periods (4.0, 2.0–6.8 vs. 4.0, 1.3–7.0 days, respectively, $p = 0.98$).

This study confirmed a remarkable reduction in PED visits during the first year of the pandemic.⁴ Most interestingly, it showed that, although children with ARI presented later to the PED during the first pandemic wave, this was not associated with a longer hospital stay than in previous years.

Despite the existence of a normal seasonal variation of ARI incidence among different years, the reduction in PED visits was likely to have been due to a decrease in the circulation of respiratory viruses during the first pandemic year.⁵ Furthermore, the advice by the authorities to only visit the PED for urgent issues, and the fear of COVID-19 infections in hospital settings, may have played a major role in the epidemiological changes we observed. The decrease in nonurgent visits might be due to the more appropriate use of the PED during the first months of the pandemic. This hypothesis is supported by data on the duration of hospital stays during the first wave of the pandemic.

Previous studies have associated overcrowded PEDs with increased numbers of return visits and hospital admissions. The findings of this study might help to develop, and support, new strategies to decrease the number of unnecessary visits to the PED.

This study had some limitations. The data collection was retrospective and from a single centre, and the aetiology of the ARIs was not considered.

In conclusion, this study confirmed that the first year of the COVID-19 pandemic had a significant impact on children attending an Italian PED. However, it does not support the hypothesis that children presented with more severe conditions during the first few

Abbreviations: ARI, acute respiratory infection; PED, paediatric emergency department.

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TABLE 1 Paediatric emergency visits, duration of symptoms before presentation, clinical history and outcomes of patients with ARI during the study periods

	9 March to 3 May		4 May to 3 November		4 November to 8 March	
	2018–2020	First wave 2020/2021	2018–2020	Recovery phase	2018–2020	Second wave 2020/2021
Total visits, <i>n</i>	1292	109	2857	547	4210	531
Preterm/chronic diseases, <i>n</i> (%)	189 (15)	13 (12)	320 (11)	77 (14)	494 (12)	61 (12)
DOS before PED visit days median [IQR]	1 [1–3]	3 [1–5]*	2 [0–4]	1 [0–2]*	2 [0–3]	1 [0–3]
Hospitalisation (all), <i>n</i> (%)	102 (7.9)	18 (17)**	159 (5.6)	41 (7.5)	374 (8.9)	29 (5.5)**
Hospitalisation (preterm/chronic diseases), <i>n</i> (%) [§]	35 (34)	5 (28)	37 (23)	22 (54)**	93 (25)	8 (28)

Abbreviations: DOS, duration of symptom; IQR, interquartile range.

[§]Percentages refer to the total number of hospitalizations.

p* < 0.05 (Mann–Whitney U test); *p* < 0.01 (chi-squared test).

months of the pandemic. These data suggest that the overuse of paediatric emergency services can decrease without having an impact on patient's clinical outcomes.

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CONFLICT OF INTEREST

None.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.