

The impact of the COVID-19 lockdown in Italy on a paediatric emergency setting

Italy has been one of countries most affected by the COVID-19 pandemic, and the Government instituted a strict national lockdown on March 9, 2020 to limit the spread. Healthcare services were only open for emergencies or undelayable needs.

This study describes the impact of the lockdown on the tertiary-level Paediatric Emergency Department (PED) at the Institute for Maternal and Child Health IRCCS Burlo Garofolo, in Trieste, Northeast Italy. It is the only PED in the city and sees 25 000 patients aged 0-17 annually.

This retrospective study measures the number of visits and the epidemiological characteristics of the patients evaluated at the PED. We covered the 35-day periods before and after the national lockdown: February 2 to March 8 and March 9 to April 13, 2020. To determine whether the visits were influenced by normal seasonal variations, we also compared the post-lockdown data with the same period in 2019. The Institute's Institutional Review Board approved the study protocol.

The PED database provided the age and gender of the patients, date of the visit, nursing triage category, the patient's main complaint and admission status. Triage followed the four-level national triage category system, which ranges from not urgent to emergency and resuscitation (Table 1).

The primary outcome was urgent visits and admissions before and after the lockdown, and the second outcome was the comparison between the post-lockdown period in 2020 and the same period in 2019.

Continuous variables were described as medians and interquartile ranges and the categorical variables as absolute numbers and percentages. The Mann-Whitney test evaluated the mean difference in the continuous variables before and after lockdown and in 2020 and 2019. Fisher's exact test or chi-square test verified the associations between the categorical variables in both 2020 and in 2019. A *P* value of < 0.05 was considered significant.

The number of PED visits declined considerably after the national lockdown (Table 1). This fell by 76.3%, from 2719 to 646 visits, before and after the lockdown. The decrease from 2019 to 2020 was 77.5%, which confirmed the effect of lockdown.

We experienced a decrease in the absolute number of non-urgent and urgent cases. After the lockdown, there was a significant decline in respiratory infections, such as fever, respiratory distress, cough, sore throat and earache and in symptoms related to functional syndromes, such as headache, dizziness and chest pain. Injuries also declined. However, the number of agitation symptoms remains stable.

The number of patients admitted to the hospital, in particular to the paediatric intensive care unit (PICU), also declined.

On the other hand, the percentage of urgent triage codes and hospital admissions increased, suggesting that patients in urgent need of medical care came to the PED despite the lockdown. We did not observe a relative increase in emergent codes or in PICU admissions, suggesting the lockdown did not cause a considerable delay in referrals. However, only a limited number of patients needed emergent care during the short study period and the real effects of lockdown on these relatively rare events must be interpreted with caution. After lockdown, a patient affected by intellectual disability arrived dead at the hospital after 10 days of fever and respiratory distress. We cannot exclude that this tragic event could have been related to delaying care due to the fear of COVID-19 or to the lockdown itself.

We know that epidemics can spread easily in emergency settings¹ and limited access to the PED may have helped to limit the spread of COVID-19. It is hard to estimate whether it was the fear of contagion or the lockdown that kept people from accessing PED. Reports from general emergency departments have showed reduced visits during epidemics, even without lockdown.² During the study period, more than 3000 people in our region tested positive for the virus and at least 280 died. In our city, 1250 adults and 60 children and adolescents tested positive, but we only admitted two paediatric patients with COVID-19.

It is possible that factors apart from the lockdown, such as an independent variation in the spread of infective diseases may have influenced our findings. Our data refer to a single PED, limiting the generalisability of our findings. Nevertheless, analysing the effects of lockdown on our clinical setting was important, as it helps us to

TABLE 1 Number of visits and main characteristics of patients before and after the Italian national lockdown and in the same period in 2019

	Pre-lockdown February 2 -March 8, 2020	Post-lockdown March 9 - April 13, 2020	<i>P</i> value Pre vs post	2019 March 9 - April 13, 2019	<i>P</i> value 2020 vs 2019
Patients, n	2719	646		2866	
Median (IQR), age, y	6 (2-11)	6 (2-11)	0.35	7 (2-12)	.02
Male sex, n (%)	1403 (51.6)	325 (50.3)	0.56	1487 (51.9)	.47
Triage category, n (%)					
White (not urgent)	815 (30.0)	183 (28.3)	0.41	815 (28.4)	.96
Green (minor urgencies)	1719 (63.2)	398 (61.6)	0.45	1831 (63.9)	.28
Yellow (urgent)	178 (6.5)	61 (9.4)	0.01	214 (7.5)	.1
Red (emergency/resus)	7 (0.3)	4 (0.6)	0.24	6 (0.2)	.1
Main complaint, n (%)					
Injuries	613 (22.5)	150 (23.2)	0.71	703 (24.5)	.48
Abdominal pain	107 (3.9)	18 (2.8)	0.17	121 (4.2)	.09
Vomit	82 (3.0)	15 (2.3)	0.34	116 (4.0)	.04
Respiratory distress	116 (4.3)	22 (3.4)	0.32	88 (3.1)	.66
Fever	302 (11.1)	69 (10.7)	0.76	171 (6.0)	<.0001
Headache	51 (1.9)	5 (0.8)	0.06	50 (1.7)	.08
Dizziness	11 (0.4)	0 (0.0)	0.14	19 (0.7)	.04
Agitation state	15 (0.01)	15 (2.3)	<0.0001	14 (0.5)	<.0001
Chest pain	19 (0.7)	3 (0.5)	0.79	34 (1.2)	.13
Arthralgia	27 (1.0)	6 (0.9)	0.88	43 (1.5)	.26
Cough	238 (8.8)	19 (2.9)	<0.0001	118 (4.1)	.16
Earache	156 (5.7)	4 (0.6)	<0.0001	136 (4.7)	<.0001
Sore throat	80 (2.9)	7 (1.1)	0.01	61 (2.1)	.08
Skin rash	175 (6.4)	42 (6.5)	0.95	224 (7.8)	.25
Seizure	27 (1.0)	7 (1.1)	0.83	13 (0.5)	.08
Admitted, wards n (%)					
Paediatric	62 (2.3)	48 (7.4)	<0.0001	80 (2.8)	<.0001
Neuropsychiatric	23 (37.1)	14 (29.2)	0.38	31 (38.8)	.27
Surgical	4 (6.5)	6 (12.5)	0.33	8 (10.0)	.66
Orthopaedic	12 (19.4)	13 (27.1)	0.34	18 (22.5)	.56
Neonatal	10 (16.1)	9 (18.8)	0.72	10 (12.5)	.34
Neonatal	5 (8.1)	0 (0.00)	0.07	5 (6.3)	.16
PICU	3 (4.8)	1 (2.1)	0.63	2 (2.5)	1
Admitted for single complaint, n (%)					
Injuries	25 (4.1)	17 (11.3)	<0.0001	20 (2.8)	<.0001
Abdominal pain	7 (6.5)	3 (16.7)	0.16	10 (8.3)	.38
Vomit	1 (1.2)	4 (26.7)	<0.0001	6 (5.2)	.02
Respiratory distress	14 (12.1)	10 (45.5)	<0.0001	12 (13.6)	<.0001
Fever	7 (2.3)	6 (8.7)	0.02	5 (2.9)	.08
Headache	0 (0.00)	0 (0.00)	-	1 (2.0)	-
Agitation state	6 (40.0)	8 (53.3)	0.46	3 (21.4)	.13
COVID-19 admissions	1	1		0	
Deaths, n	0	1		0	

understand what can be expected when such measures are adopted. This could also help us to plan for future outbreak.

KEYWORDS

children, emergency care, health promotion

CONFLICTS OF INTERESTS

The authors have no conflicts of interests to declare.

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