



# How the COVID-19 Pandemic Impacted the Way that Pediatric Patients are Admitted in an Emergency Department

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**Abstract:** *The COVID-19 pandemic has changed how patients perceive healthcare but also the organization of Emergency services, notably through the guidelines issued by health authorities (HA) regarding the dynamics of referrals. The aim of this study is to analyze the differences in admissions to the Pediatric Emergency Department before and during the pandemic period. The origins of patients admitted to a level II Hospital's Pediatric Emergency Department from March 2020 to March 2021 were analyzed and compared with the same period of the previous year.*

*There were 32,145 and 13,629 emergency admissions in the pre-pandemic and pandemic periods, respectively. An increase in the age distribution of patients during the pandemic period was observed (median of 5 vs 4 years,  $p < 0.01$ ). SNS24 referred three times more patients during the pandemic, more often with lower severity in Manchester triage priority ( $p < 0.01$ ). Regarding discharge, patients coming on their own initiative or from PHC less frequently received discharge home ( $p < 0.01$ ), unlike those coming from SNS24 who needed less hospitalization ( $p = 0.01$ ).*

*It is concluded that during the pandemic, more patients coming from SNS24 were admitted, in line with HA recommendations, although they were less severe cases, not requiring hospital care. Fewer patients without referral, with a greater need for care, were admitted, suggesting a more selective healthcare-seeking behavior.*

## 1. INTRODUCTION

The COVID-19 pandemic has profoundly changed the way patients perceive healthcare services, both out of fear of accessing services inappropriately and due to the need to reorganize resources to meet the demand. At the public health level, several methods of pandemic management have been implemented, such as the opening of facilities for rapid testing, the mobilization of field hospitals, and awareness campaigns urging people to adopt individual protection and hygiene measures, practice social distancing, and seek healthcare judiciously.<sup>[1]</sup> There are already several studies showing a shift in the pattern of healthcare-seeking behavior, with overall fewer emergency admissions, but conversely, later admissions for certain types of conditions.<sup>[2]</sup> However, particularly in children, pandemic containment measures such as home isolation, mask-wearing, and hand washing have led to a significant decrease in the most common viral infections. Specifically, respiratory infections, which were the most frequent reason for admission in the

pre-pandemic period, have seen a notable decrease in admissions.<sup>[3,4]</sup>

In Portugal, clinical guidance norms and awareness campaigns promoted the use of the SNS24, a national health telephone line, for initial triage of patients who might require hospital admission, aiming to alleviate the pressure from inadvertent healthcare-seeking behavior.<sup>[5]</sup> The objective of this study was to determine how patients arrived at the pediatric emergency department during the COVID-19 pandemic and assess the impact of resources such as SNS24 on referring patients who genuinely needed specialized care and reducing healthcare-seeking behavior.

## 2. METHODS

A retrospective study was conducted in a pediatric emergency department (ED) that receives around 22,000 patients annually. Patients are admitted either based on their parents' initiative or upon referral from their primary care physician or through the National Telephonic Service (SNS24). SNS24 was

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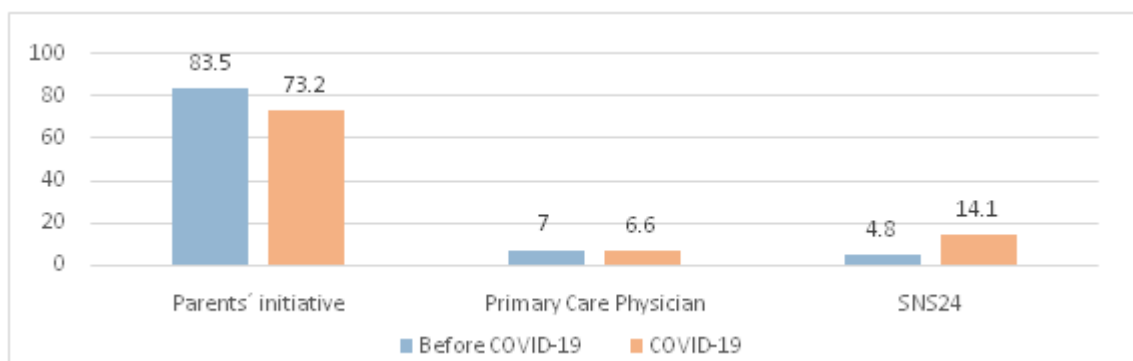
established in 2017 as a telephone service where patients and parents can seek advice regarding their children's acute illnesses. Following assessment, they may receive guidance to monitor their child at home, seek care at a primary care center, or be directed to an emergency department.

Two admission periods were compared: the first before the onset of the COVID-19 pandemic (March 2019 to March 2020) and the second period covering the initial wave of COVID-19 (April 2020 to April 2021). The study recorded the type of admission (parents' initiative, Primary care referral, or through SNS24), the assessment of the priority assigned by the Manchester triage as a marker of severity at admission, as well as the outcome at discharge (discharged home or admission to inpatient facilities). A frequency analysis was initially

performed. The association between categorical variables was studied with a Chi-Squared test and the differences in distribution between categorical and continuous variables was assessed with the Mann-Whitney U test. The analysis was performed with Statistical Package for Social Sciences 26.0.

### 3. RESULTS

Throughout the entire study period, there were 45,774 admissions recorded, with 32,145 (70.2%) occurring before COVID-19 and 13,629 (29.8%) during the pandemic. A total of 2,360 admissions were excluded from the final analysis as they originated from outpatient clinics or other hospitals. Patients were significantly older at admission during the pandemic, compared to the previous period (4,0 vs 5,0 years;  $p=0,098$ ). Admissions were plotted as relative percentages per subgroup (Image 1).



**Figure 1.** Relative percentage of admissions per time subgroup

Table 1 presents the variations in priority levels assigned through Manchester Triage and the discharge outcomes of patients.

Group	Manchester Triage Priority (%)						p	Discharge (%)				
	Red or orange		Yellow		Green or blue			Home		Inpatient admission		p
	BC	C	BC	C	BC	C		BC	C	BC	C	
Parents' initiative	6.2	7.4	37.9	36.8	55.9	55.8	<0.001	93.5	90.7	6.5	9.3	<0.001
SNS24	8.0	6.1	42.6	32.1	49.4	61.8	<0.001	94.6	96.8	5.4	3.2	0.018
Primary Care	10.5	11.9	48.2	46.4	41.3	41.7	0.004	88.1	82.6	11.9	17.4	<0.001

BC – Before the COVID-19 pandemic; C – during the pandemic

### 4. DISCUSSION

During the COVID-19 pandemic, we witnessed a significant decrease (57,6%) in the number of admissions to our Pediatric Emergency Department compared with the previous similar period, consistent with similar studies in the literature.<sup>[3,4,6]</sup>

The significant change in the median age of patients upon admission may be influenced by the fact that COVID-19 itself does not result in more severe illness in younger infants and the decrease in other circulating respiratory viruses

during lockdowns, notably RSV, which mainly affects preschool-aged children may have played a role.<sup>[5,7]</sup> The frequency of admissions for somatic symptoms increased among adolescents.<sup>[8]</sup>

During the COVID-19 period, there was a 10% decrease in patients being admitted based on their parents' initiative, may be because National Health Services advised initial contact through the SNS24, especially when symptoms were present, which might have discouraged direct access to the ED. However, there was an

increase in referrals by SNS24, nearly tripling the volume seen before the pandemic, similar to other settings.<sup>[9]</sup> SNS24 referred a higher number of patients with lower clinical severity upon admission, resulting in fewer hospitalizations for these individuals. Other articles mention the incorrect referral by SNS24 during the pandemic, which may have contributed to lower severity in these patients.<sup>[10]</sup> On the other hand, parents who brought their children and patients initially seen by the Primary Care Physician had higher priority levels and were more frequently admitted to inpatient wards. This may signify a more judicious seeking of hospital care and is consistent with other manuscripts showing more severe admissions in pediatric ED.<sup>[11]</sup>

We conclude that the population sought healthcare services less during the pandemic, with fewer individuals admitted on their own initiative. However, overall, the number of patients who present without referral remains very high, indicating a need for greater health literacy among the population and public health measures to promote access to primary healthcare and lower levels of care as a first approach. SNS24 referred more patients, perhaps due to an increase in calls; however, considering the lower number of patients admitted to inpatient care, we may consider how it may have contributed to avoiding unnecessary admissions.

### REFERENCES

- [1] Webster P. Virtual health care in the era of COVID-19. *Lancet* 2020; 395: 1180–1181.
- [2] Wongtanasarasin W, Srisawang T, Yothiya W, Phinyo P. Impact of national lockdown towards emergency department visits and admission rates during the COVID-19 pandemic in Thailand: A hospital-based study. *EMA* 2021;33(2):316–23.
- [3] Isba R, Edge R, Auerbach M, Cicero MX, Jenner R, et al. COVID-19: Transatlantic Declines in Pediatric Emergency Admissions. *PediatrEmergCare*. 2020 Nov;36(11):551-553.
- [4] Di Sarno L, Curatola A, Conti G, Covino M, Bertolaso C, Chiaretti A, Gatto A. The effects of COVID-19 outbreak on pediatric emergency department admissions for acute wheezing. *PediatrPulmonol*. 2022 May;57(5):1167-1172.
- [5] Nationalclinicaldocument 004/2020 from 23/03/2020, updatedonthe 19/04/2021 “COVID-19: abordagem ao doente com suspeita ou confirmação de COVID-19”, Direção Geral de Saúde.
- [6] Dopfer C, Wetzke M, Zychlinsky Scharff A, Mueller F, Dressler F, Baumann U, Sasse M, Hansen G, Jablonka A, Happel C. COVID-19 related reduction in pediatric emergency healthcare utilization - a concerning trend. *BMC Pediatr*. 2020;20(1):427.
- [7] Zhu Y, Almeida FJ, Baillie JK, Bowen AC, Britton PN, et al. International Severe Acute Respiratory and Emerging Infection Consortium Comprehensive Clinical Characterisation Collaboration (ISARIC4C) investigators. International Pediatric COVID-19 Severity Over the Course of the Pandemic. *JAMA Pediatr*. 2023; 177(10):1073-1084.
- [8] Turco R, Russo M, Lenta S, Apicella A, GagliardoT, et al. Pediatric emergency care admissions for somatic symptom disorders during the COVID-19 pandemic. *Eur J Pediatr*. 2023; 182(2): 957-964.
- [9] Paiva R, Martins C, Rodrigues F, Domingues M. Impactof COVID-19 on a paediatricemergencyservice. *Eur J Pediatr*. 2021;180(8): 2571-2579.
- [10] Gonçalves R, Sá B, Cunha R, Winckler L, Moleiro P. Evaluation of the Adequacy of the Referral Via a Telephone Health Advice Line to a Pediatric Emergency Department During the COVID-19 Pandemic in Portugal. *Acta Med Port*. 2021; 34(4):312.
- [11] Sokoloff WC, Krief WI, Giusto KA, Mohaimin T, Murphy-Hockett C, Rocker J, Williamson KA. Pediatric emergency department utilization during the COVID-19 pandemic in New York City. *Am J EmergMed*. 2021;45:100-104.

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