ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 16, Issue 9, 2023

Online - 2455-3891
Print - 0974-2441

Research Article

TO STUDY THE CLINICAL AND DEMOGRAPHIC PROFILE OF COVID-19 PEDIATRIC PATIENTS (UP TO 18 YEARS) IN A TERTIARY CARE CENTER OF JAIPUR, RAJASTHAN

SHEJAL AGARWAL, SHALIN PARMAR, PRIYA MARWAH, MUNISH KUMAR KAKKAR, JITENDRA KUMAR GUPTA, ABHISHEK KUMAR SHARMA*

Department of Pediatrics, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India.
***Corresponding author: Abhishek Kumar Sharma; Email: draksharma82@gmail.com**

Received: 20 March 2023, Revised and Accepted: 02 May 2023

ABSTRACT

Objective: Coronavirus disease-19 (COVID-19) infection has quickly developed into a global pandemic. According to the available evidence, children appear to be less likely to be afflicted and the condition may be less severe, but things could change. Rapid deterioration and enhancements in the physiologic state are a hallmark of the pediatric community. Therefore, this study was conducted with the aim to study the demographic and clinical parameters of pediatric COVID patients.

Methods: This hospital-based prospective and retrospective study was conducted during April 1st, 2020–July 2022 at the COVID ward and outpatient department, Mahatma Gandhi Medical College and Hospital, Jaipur. We included 276 children up to 18 years suffering from COVID-19 infection. We collected data of our study population from medical records and filled up the predesigned pro forma for admitted patients. Admitted children were classified as, per ICMR guidelines as: asymptomatic, mild, moderate, and severe variety. Statistical analysis was done with the SPSS software.

Results: Highest percentage of cases 48.39% in the age group 12–18 years, were followed by 31.45% in the 7–12-year-old age group. About 13.04% of patients were asymptomatic, whereas the remaining cases were symptomatic, with severity levels of mild 49.28%, moderate 26.81%, and severe 10.87%. Fever was the most prevalent symptom 69.2%, cough at 43.84%, throat ache 18.12%, breathing difficulties 15.22%, headache 2.54%.

Conclusion: In the present study, we concluded that during the third wave of the pandemic, most children had symptomatic illnesses, but recovery was fast among non-hospitalized children. Multisystem inflammatory syndrome in children was more common in elderly children.

Keywords: COVID-19, Pandemic, Multisystem inflammatory syndrome in children.

 DOI: http://dx.doi.org/10.22159/ajpcr.2023v16i9.47885. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

A severe acute respiratory syndrome caused by the coronavirus has quickly developed into a global pandemic that affected more than 1 million people worldwide [1]. Although it was primarily reported as a respiratory tract infection, new research shows that coronavirus disease-19 (COVID-19) can infect humans and cause illnesses of varying severity, including lower respiratory tract infections such as pneumonia, bronchitis, and severe acute respiratory syndrome as well as liver, enteric, and neurological diseases [2].

While COVID-19 infection can affect kids of all ages, it primarily affects and has a greater negative impact on the younger age groups. Children, however, may have an asymptomatic infection as well as protracted fecal shedding, both of which may aid in the pandemic's spread [3]. Fever and cough are the most prevalent clinical symptoms in children with COVID-19, while some children also experience fatigue, myalgia, nasal congestion, runny nose, sneezing, sore throat, headache, dizziness, vomiting, and stomach pain. A few kids simply experience cough or diarrhea instead of fever, and even fewer kids can be asymptomatic carriers. Atypical symptoms can appear in certain infants and children as vomiting, diarrhea, and other gastrointestinal symptoms or they can merely be asthma and shortness of breath [4,5]. Overall the disease carries less mortality in the pediatric population and like adults co-morbidities and concomitant infections could alter disease outcome. Multisystem inflammatory syndrome in children (MIS-C) syndrome is impermanently linked to previous exposure to SARS-CoV-2 contamination. This is a serious presentation of the virus in kids and needs early detection to avoid its progression and likely unsatisfactory outcomes [6]. Therefore, this study was conducted with the aim to study the demographic and clinical parameters of pediatric COVID patients.

Aims and objectives

The aim of the study was to assess the demographic and clinical presentation of pediatric COVID-19 patients.

METHODS

This hospital-based prospective and retrospective study was conducted at the COVID ward and outpatient department (OPD), Mahatma Gandhi Medical College and Hospital, Jaipur. We included children up to 18 years of age who had tested positive for SARS-CoV-2 by RT-PCR, managed as inpatient during April 1st, 2020–January 31st, 2021 (for retrospective data), and managed as outpatient or inpatient between November 1st, 2020 and July 31st, 2022 (for prospective data). A child with a COVID-19 diagnosis more than 14 days ago who is now admitted for another reason and has already been entered into the study database and an eligible child who requires readmission has already been entered into the study database were excluded from the study.

We collected data on epidemiology, clinical characteristics, laboratory findings, comorbidities, and management of our study population from medical records and filled up the predesigned pro forma. Admitted children were classified, per ICMR guidelines as: asymptomatic, mild severity, severe variety that were with septic shock, and acute respiratory distress syndrome (ARDS).

We recorded history and comorbidity, history of exposures or risk for COVID-19, anthropometric measurement, vitals, and clinical manifestations, duration of hospital stay in the master chart. Laboratory workup was done and patients were being treated as per ICMR guidelines and followed institutional discharge policy. For newborns similar methodology was followed by exploring medical

record sheets, data collected, and put on the predesigned chart. Complications developed due to COVID-19, treatment, and outcome were also assessed.

Statistical analysis

It was done using SSPS software version 23. Data were expressed in terms of frequency and percentage. Mean, median and interquartile range (IQR) was calculated for various parameters.

RESULTS

Table 1 depicts the distribution of COVID-19 cases in pediatric patients according to inpatient department/OPD; where we found that out of 276 cases, 40.58% of patients required hospitalization, and the rest 59.42% were given treatment on an OPD basis.

Table 2 shows the distribution of COVID-19 cases in pediatric patients according to age where the maximum number of cases in the year 2020 were found 60 (48.39%) in the age group 12–18 years, followed by 39 (31.45%) in the age group of 7–12 years. A similar pattern was observed in the year 2021, a maximum number of cases were found 44 (36.07%) in the age group of 12–18 years, followed by (42) 34.43% in the age of 7–12 years. And also in the year 2022, 10 (33.33%) in the age of 7–12 years, followed by 6 (20%) in the age group 12–18 years.

Table 3 depicts the distribution of COVID-19 cases in pediatric patients based on sex, a maximum number of males 55.65%, 60.66%, and 63.33% in the year 2020, in the year 2021, and in the year 2022, respectively; this observation was not significant (p=0.626NS). Hence, no significant difference was observed in the distribution of cases according to sex during the study period.

Table 4 depicts the distribution of COVID-19 cases in pediatric patients according to the severity of symptoms where we observed that 13.04% of the cases are asymptomatic. The remainder was symptomatic, with mild accounting for 49.28%, moderate accounting for 26.81%, and severe accounting for 10.87%.

Table 1: Distribution of COVID-19 cases in pediatric patients according to IPD/OPD (n=276)

IPD/OPD	n (%)
IPD	104 (40.58)
OPD	172 (59.42)
Total	276 (100)

OPD: Outpatient department, IPD: Inpatient department

Table 5 showed the distribution of COVID-19 cases in pediatric patients according to complaints. The most common symptom was fever >100.4°F (38°C) with the highest number of cases (67.74%) in year 2020, (67.21%) in year 2021, and (83.33%) in year 2022. About 83.33% of the cases with fever >100.4°F (38°C); Among respiratory symptoms, the most common was cough 43.84% followed by sore throat (18.12%), breathing difficulty (15.22%) and chest pain (2.54%). Coughing and difficulty breathing were more common in the year 2022, while sore throats were more common in previous years. In ENT and Central nervous system symptoms, the most common symptoms were loss of taste and/or smell (23.19%) followed by running nose (17.75%), headache (6.17%), sore throat (5.43%), and seizure (3.99%). In GI symptoms, the most common were abdominal pain 21.01%, vomiting 18.84%, diarrhea 7.61% and nausea 5.07%.

Table 6 shows the distribution of COVID-19 cases in pediatric patients according to comorbidity. The comorbidities were renal disease at 2.9%, TB at 1.09%, diabetes at 1.09%, asthma at 0.36%, immunosuppression, and malignancy at 0.36%, congenital heart disease at 0.72%, and seizure disorder at 0.36%. No significant difference was observed in all years. Total 19 cases showed comorbidities among 276 cases (6.88%).

Table 7 shows the distribution of COVID-19 cases in pediatric patients according to the complications that developed. Mucositis was the most common (13.04%) followed by periorbital edema (8.7%), ARDS (6.52%), pneumonia (6.52%), shock (3.26%), and acute kidney injury (3.26%). ARDS, pleural effusion, periorbital edema and skin peeling, mucositis, and MIS-C were all more common in 2022 than in the previous years. MIS-C as a complication exclusive to the pediatric population was seen in 27 (9.78%) cases.

Table 8 shows the distribution of COVID-19 cases in pediatric patients according to maximum respiratory support. Out of 104 admitted cases, 79.8% of cases were in no need of any respiratory support. The high-flow nasal cannula (HFNC) (8.65%), oxygen only (3.85%), intubation (3.85%), CPAP (2.88%), tracheostomized (0.96%). A maximum number of the admitted cases were the ones who were on room air and did not require any respiratory support, that is 88.33% in the year 2020, 87.5% in 2021, and 45% in 2022. Out of 42 patients who developed breathing difficulty, 50% required some form of respiratory support. And of the total cases who required admission, only 20.19% required some form of respiratory support.

DISCUSSION

In this study, a total of 276 COVID-19 pediatric patients were included, the median age of patients was 9 years. Out of 276 cases, 40.58% of

Table 2: Distribution of COVID-19 cases in pediatric patients according to age

Age (years)	2020, n (%)	2021, n (%)	2022, n (%)	Total, n (%)	p-value
0–28 days	1 (0.81)	1 (0.82)	5 (16.67)	7 (2.54)	<0.001 (S)
1–6 months	0	2 (1.64)	1 (3.33)	3 (1.09)	
6–12 months	3 (2.42)	2 (1.64)	2 (6.67)	7 (2.54)	
1–3 years	12 (9.68)	19 (15.57)	5 (16.67)	36 (13.04)	
4–6 years	9 (7.26)	12 (9.84)	1 (3.33)	22 (7.97)	
7–12 years	39 (31.45)	42 (34.43)	10 (33.33)	91 (32.97)	
12–18 years	60 (48.39)	44 (36.07)	6 (20)	110 (39.86)	
Total	124 (100)	122 (100)	30 (100)	276 (100)	

S: Significant

Table 3: Distribution of COVID-19 cases in pediatric patients according to sex

Sex	2020, n (%)	2021, n (%)	2022, n (%)	Total, n (%)	p-value
Female	55 (44.35)	48 (39.34)	11 (36.67)	114 (41.3)	0.626 (NS)
Male	69 (55.65)	74 (60.66)	19 (63.33)	162 (58.7)	
Total	124 (100)	122 (100)	30 (100)	276 (100)	

χ^2=0.935 with 2 degrees of freedom; p=0.626. NS: Not significant

patients required hospitalization, and the rest 59.42% were given treatment on an OPD basis which is a comparable study done by Balasubramanian *et al*. (2020) which concluded that pediatric COVID-19 infection is relatively mild when compared to adults, and children are reported to have a better prognosis [7].

Table 4: Distribution of COVID-19 cases in pediatric patients according to severity of symptoms (n=276)

Severity	n (%)
Symptomatic (n=240)	240 (86.96)
Mild	136 (49.28)
Moderate	74 (26.81)
Severe	30 (10.87)
Asymptomatic (n=36)	36 (13.04)

Sarkar *et al*. (2022) in their study, review of hospital records was done at a tertiary care hospital, for kids seen between the 1st and January 25th, 2022. Out of total 112 SARS-CoV-2 positive patients, 17 were hospitalized and 95 were treated in the OPD [8].

In the present study, the distribution of the cases according to age where the maximum number of the cases in year 2020 was found 60 (48.39%) in the age of 12–18 years, followed by 39 (31.45%) in the age of 7–12 years. A similar pattern was observed in the year 2021, a maximum

Table 5: Distribution of COVID-19 cases in pediatric patients according to symptoms

Symptoms	2020 (n=124), n (%)	2021 (n=122), n (%)	2022 (n=30), n (%)	Total, n (%)	P
Fever >100.4*f (38*c)	84 (67.74)	82 (67.21)	25 (83.33)	191 (69.2)	0.206 (NS)
Respiratory symptoms					
Sore throat	31 (25)	17 (13.93)	2 (6.67)	50 (18.12)	0.018 (S)
Cough	45 (36.29)	57 (46.72)	19 (63.33)	121 (43.84)	0.019 (S)
Sputum	8 (6.45)	0	0	8 (2.9)	0.006 (S)
Difficulty in breathing	13 (10.48)	11 (9.02)	18 (60)	42 (15.22)	<0.001 (S)
Chest pain	4 (3.23)	3 (2.46)	0	7 (2.54)	0.600 (NS)
ENT and CNS symptoms					
Headache	3 (2.42)	8 (6.56)	6 (20)	17 (6.16)	0.002 (S)
Running nose	22 (17.74)	24 (19.67)	3 (10)	49 (17.75)	0.462 (NS)
Throat pain	5 (4.03)	9 (7.38)	1 (3.33)	15 (5.43)	0.443 (NS)
Loss of taste and/or smell	22 (17.74)	27 (22.13)	15 (50)	64 (23.19)	<0.001 (S)
Seizures	5 (4.03)	2 (1.64)	4 (13.33)	11 (3.99)	0.014 (S)
Gastrointestinal symptoms					
Abdominal pain	18 (14.52)	24 (19.67)	16 (53.33)	58 (21.01)	<0.001 (S)
Nausea	4 (3.23)	3 (2.46)	7 (23.33)	14 (5.07)	<0.001 (S)
Vomiting	18 (14.52)	16 (13.11)	18 (60)	52 (18.84)	<0.001 (S)
Diarrhea	11 (8.87)	7 (5.74)	3 (10)	21 (7.61)	0.754 (NS)
Others					
Rash	9 (7.26)	16 (13.11)	9 (30)	34 (12.32)	0.003 (S)
Eye redness (conjunctivitis)	0	2 (1.64)	1 (3.33)	3 (1.09)	0.210 (NS)
Body pain/weakness	26 (20.97)	38 (31.15)	16 (53.33)	80 (28.99)	0.002 (S)

S: Significant, NS: Not significant, CNS: Central nervous system, ENT: Ear, nose and throat

Table 6: Distribution of COVID-19 cases in pediatric patients according to comorbidity

Comorbidity	2020, n (%)	2021, n (%)	2022, n (%)	Total (n=276), n (%)
TB	3 (1.087)	0	0	3 (1.09)
Bronchial asthma	1 (0.362)	0	0	1 (0.36)
Diabetes	1 (0.362)	1 (0.36)	1 (0.36)	3 (1.09)
Renal disease	2 (0.725)	2 (0.72)	4 (1.45)	8 (2.9)
Immunosuppression/malignancy	0	1 (0.36)	0	1 (0.36)
HIV/AIDS	0	0	0	0
Congenital heart disease	1 (0.362)	0	1 (0.36)	2 (0.72)
Seizure disorder	1 (0.362)	0	0	1 (0.36)
Total	9 (3.26)	4 (1.44)	6 (2.17)	19 (6.88)

TB: Tuberculosis

Table 7: Distribution of COVID-19 cases in pediatric patients according to complications developed

Complication	2020 (n=124), n (%)	2021 (n=122), n (%)	2022 (n=30), n (%)	Total (n=276), n (%)	p-values
ARDS	7 (5.65)	2 (1.64)	9 (30)	18 (6.52)	<0.001 (S)
Shock	5 (4.03)	3 (2.46)	1 (3.33)	9 (3.26)	0.785 (NS)
Pneumonia	9 (7.26)	5 (4.1)	4 (13.33)	18 (6.52)	0.168 (NS)
Pleural effusion	2 (1.61)	2 (1.64)	5 (16.67)	9 (3.26)	<0.001 (S)
Periorbital edema	6 (4.84)	9 (7.38)	9 (30)	24 (8.7)	<0.001 (S)
Acute kidney injury	3 (2.42)	3 (2.46)	3 (10)	9 (3.26)	0.089 (NS)
Cervical lymphadenopathy	0	2 (1.64)	0	2 (0.72)	0.280 (NS)
Skin peeling	0	3 (2.46)	2 (6.67)	5 (1.81)	0.038 (S)
Mucositis	8 (6.45)	9 (7.38)	19 (63.33)	36 (13.04)	<0.001 (S)
Atypical Kawasaki disease	0	4 (1.64)	0	4 (1.54)	0.380 (NS)
MIS-C	0	10 (8.2)	17 (56.67)	27 (9.78)	<0.001 (S)

MIS-C: Multisystem inflammatory syndrome in children, ARDS: Acute respiratory distress syndrome, S: Significant, NS: Not significant

Table 8: Distribution of COVID-19 cases in pediatric patients according to maximum respiratory support

Maximum respiratory support (for IPD patients)	2020 (n=60)	2021 (n=24)	2022 (n=20)	Total
Normal, no support	53 (88.33)	21 (87.5)	9 (45)	83 (79.8)
Oxygen only	1 (1.67)	1 (4.17)	2 (10)	4 (3.85)
HFNC	0	1 (4.17)	8 (40)	9 (8.65)
CPAP	2 (3.33)	0	1 (5	3 (2.88)
Intubation	4 (6.67)	0	0	4 (3.85)
Intubation, tracheostomized	0	1 (4.17)	0	1 (0.96)

HFNC: High-flow nasal cannula, IPD: Inpatient department, CPAP: Continuous positive airway pressure

number of the cases were found 44 (36.07%) in the age of 12–18 years in year 2020, followed by 42 (34.43%) in the age of 7–12 years in year 2021 and 10 (33.33%) in the age of 7–12 years, followed by 6 (20%) in the age of 12–18 years in year 2022. Banerjee *et al*. depicted COVID-19 profiles in Indian kids in the multicentric observational research study from tertiary care hospitals in West Bengal. Kids information up to 12 years of age showing with positive outcomes on the SARS-CoV-2 RT-PCR test, were added where the median (IQR) age of the 41 patients covered was 1 (0.42–5.0) year [9].

In our study, a maximum number of males 55.65%, 60.66%, and 63.33% in the year 2020, the year 2021, and the year 2022, respectively, this observation was not significant (p=0.626NS). Slight preponderance of male was observed. Bose *et al*. showed with almost equal sex distribution with higher disease prevalence and severity in younger age groups [10].

In our study, we observed that 13.04% of the cases are asymptomatic and the rest were symptomatic, with mild 49.28%, moderate 26.81%, and severe 10.87%. Gupta *et al*. showed that out of the 16 (18.8%) symptomatic children, 7 (43.7%) had severe symptoms and 4 (25%, all >5 years of age) had moderate symptoms [11].

The maximum number of cases had fever (69.2%) during the study period. In respiratory symptoms, cough (43.84%), sore throat (18.12%), difficulty in breathing (15.22%), and chest pain (2.54%) were common. Coughing and difficulty breathing were more common in 2022, while sore throat was more common in previous years. In ENT and neuro symptoms, the most common symptoms were loss of taste and/or smell, followed by a running nose. headache, loss of taste or smell, and seizures were more common in 17%, 50%, and 13.33% of COVID-19 infection in 2022, respectively, compared to previous years. In GI symptoms, the most common were abdominal pain (21.01%), vomiting (18.84%), diarrhea (7.61%) and nausea (5.07%). The features were similar to previous pediatric reports. Banerjee *et al*. showed that 14 (34%) kids were suffering from the common cold and rhinorrhoea. Fever, one of the major presenting features of COVID-19, was observed in 21% of cases [9].

Distribution of cases according to comorbidity were renal disease (2.9%), TB (1.09%), diabetes mellitus (1.09%), asthma (0.36%), immune suppression/malignancy (0.36%), congenital heart disease (0.72%), seizure disorder (0.36%). No significant difference was observed in all years. Total cases of comorbidities were observed in 19 cases out of 276 cases (6.88%). Banerjee *et al*. showed that almost 61% of the cases had associated comorbidities that included malignancies (19.5%), hematological disorders (2.2%), congenital heart disease (9.7), and neurological abnormalities (9.7%). Two cases had multi-system involvement in the form of an atypical Kawasaki disease-like presentation [9]. This difference could be because of the small sample size in the above study (n=41), the study design being a multi-center observational study, age group was younger than 12 years. While ours was a single-centered study with a large sample size, the maximum no of the patient were of the age group 12–18 years.

This study showed the distribution of cases based on coinfection, where dengue fever was observed in 2.9% of cases, acute necrotizing pancreatitis was observed in 1.45% of cases, and viral hepatitis and enteric fever were observed in 0.72% of cases. Bose *et al*. observed that hyperinflammatory syndrome was a new challenge in COVID-affected children as well as concomitant infections such as dengue, scrub, and enteric fever, 38 (56%) [10].

In the present study, out of the admitted patients, i.e., 104 cases, the ventilation requirements were as: oxygen only (3.85%), HFNC (8.65%), CPAP (2.88%), intubation (3.85%), intubated and tracheostomized (0.96%). The maximum number of admitted cases were the ones who did not require any form of respiratory support which was 88.33% in the year 2020, 87.5% in 2021, and 45% in 2022. Out of 42 patients who developed breathing difficulty, 50% required some form of respiratory support. And of the total cases who required admission, only 20.19% required some form of respiratory support. Banerjee *et al*. showed that 24.4% required oxygen inhalation, 4.9% were put on HFNC and 4.9% needed mechanical ventilation [9]. Sankar *et al*. showed that early intubation is preferred over non-invasive ventilation or heated, humidified, high-flow nasal cannula oxygen, as these may generate aerosols increasing the risk of infection in healthcare personnel. To prevent post-discharge dissemination of infection, home isolation for 1–2 weeks may be advised [12].

In the present study, according to complications developed, maximum cases were observed of mucositis 13.04% followed by periorbital edema 8.7%, ARDS and pneumonia 6.52% in equal proportion, shock and acute kidney injury 3.26% in equal proportion. Atypical Kawasaki-like disease was seen in 4 patients (1.44%). In year-wise proportion, a maximum number of pneumonia cases were observed at 7.26% in the year 2020, 4.1% in 2021, and 13.33% in the year 2022. MIS-C as a complication exclusive to the pediatric population was seen in 27 patients (9.8%) and more in the year 2022 as compared to previous years.

MIS-C as a complication exclusive to pediatric patients was seen in 27(9.78%) patients and was more common in 2022 than in the previous years (p<0.001). Sachdeva *et al*. showed Kawasaki disease-like features not reported in many studies, ranged from 4 to 76% of patients [13]. Sarkar *et al*. showed that the median (IQR) duration of symptoms was 2.5 (1.5) days. MIS-C was diagnosed in 4 patients [8].

Limitations

Despite having advanced diagnostic modalities and pediatric critical care, due to a lack of awareness in the pediatric age group, the number of pediatric patients was lower compared to adults. As this was a single-centric study, we recommend further studies with larger cohorts to learn more about the different symptoms, complications, and comorbidities of COVID-19 in the pediatric age group.

CONCLUSION

In the present study, we concluded that during the third wave of the pandemic, most children had symptomatic illnesses, but recovery was fast among non-hospitalized children.

- Overall, the disease carries a lower mortality rate in pediatric populations, and such as in adults, comorbidities and concomitant infections could alter the disease's outcome
- We also had COVID-19 patients with concomitant infections such as dengue fever, scrub typhus, and enteric fever, which altered their clinical course

- MIS-C was a new challenge that is more common in elderly children
- Because newborns fared well with COVID-19 infection, breastfeeding should be continued, as should rooming in with the mother, in accordance with COVID prevention protocol.

ACKNOWLEDGMENTS

We are thankful to the department faculty and our patients without their support this study would not have been possible.

AUTHORSHIP CONTRIBUTION

Dr. Abhishek Kumar Sharma: Design, manuscription writing, analysis, interpretation of data, and critical review. Dr Shejal Agarwal: Conception, Design, manuscription writing, analysis, and interpretation of data. Dr Shalin Parmar: Design, manuscription writing, analysis, and interpretation of data. Dr Priya Marwah: Design, analysis, and interpretation of data, critical review. Dr Munish Kumar Kakkar: Conception, Design, manuscription writing, interpretation of data, and critical review. Dr Jitendra Kumar Gupta: Design, manuscription writing, analysis of data, and critical review.

CONFLICT OF INTEREST

None declared.

FUNDING

No funding sources.

ETHICAL APPROVAL

This study was approved by the ethical committee of Mahatma Gandhi Medical College, Jaipur.

REFERENCES

1. Terpos E, Ntanasis-Stathopoulos I, Elalamy I, Kastritis E, Sergentanis TN, Politou M, *et al*. Hematological findings and complications of COVID-19. Am J Hematol 2020;95:834-47. doi: 10.1002/ajh.25829, PMID 32282949
2. Hui DS. An overview on severe acute respiratory syndrome (SARS). Monaldi Arch Chest Dis 2005;63:149-57. doi: 10.4081/monaldi.2005.632, PMID 16312205
3. Jiehao C, Jin X, Daojiong L, Zhi Y, Lei X, Zhenghai Q, *et al*. A case series of children with 2019 novel corona virus infection: Clinical and epidemiological features. Clin Infect Dis 2020;71:1547-51.
4. Lifen Y, Zhenyuan D, Mengqi D, Yang Z, Wanqiu D, Li P, *et al*. Suggestions for medical staff from department of pediatrics during the treatment of 2019-nCoV infection/pneumonia. J New Med 2020;51:77-84.
5. Hong H, Wang Y, Chung HT, Chen CJ. Clinical characteristics of novel coronavirus disease 2019 (COVID-19) in newborns, infants and children. Pediatr Neonatol 2020;61:131-2.
6. DeBiasi RL, Song X, Delaney M, Bell M, Smith K, Pershad J, *et al*. Severe coronavirus disease-2019 in children and young adults in the Washington, DC, metropolitan region. J Pediatr 2020;223:199-203.e1. doi: 10.1016/j.jpeds.2020.05.007, PMID 32405091
7. Balasubramanian S, Rao NM, Goenka A, Roderick M, Ramanan AV. Coronavirus disease 2019 (COVID-19) in children - what we know so far and what we do not. Indian Pediatr 2020;57:435-42. doi: 10.1007/s13312-020-1819-5, PMID 32273490
8. Sarkar M, Ghosh A, Konar MC, Roy O, Mahapatra MK, Nandi M. Clinical characteristics of children with SARS-CoV-2 infection during the third wave of the pandemic: Single Center experience. Indian Pediatr 2022;59:531-4. doi: 10.1007/s13312-022-2554-x, PMID 35596647
9. Banerjee S, Guha A, Das A, Nandi M, Mondal R. A preliminary report of COVID-19 in children in India. Indian Pediatr 2020;57:963-4. doi: 10.1007/s13312-020-2004-6, PMID 32729849
10. Bose SS, Khemani P, Khemka A, Ghosh A, Mondal R. Clinic pathological profile and outcome of COVID-19 infection among children and newborn admitted to a dedicated COVID hospital in West Bengal, India. Int J Community Med Public Health Int J Community Public Health 2021;8:339-45.
11. Gupta A, Madhavan MV, Sehgal K, Nair N, Mahajan S, Sehrawat TS, *et al*. Extrapulmonary manifestations of COVID-19. Nat Med 2020;26:1017-32. doi: 10.1038/s41591-020-0968-3, PMID 32651579
12. Sankar J, Dhochak N, Kabra SK, Lodha R. COVID-19 in children: Clinical approach and management. Indian J Pediatr 2020;87:433-42. doi: 10.1007/s12098-020-03292-1, PMID 32338347
13. Sachdeva M, Agarwal A, Sra HK, Rana M, Pradhan P, Singh M, *et al*. Multisystem inflammatory syndrome associated with COVID-19 in children (MIS-C): A systematic review of studies from India. Indian Pediatr 2022;59:563-9. doi: 10.1007/s13312-022-2559-5, PMID 35869878