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Spectrum and Severity of Clinical Manifestations in Children Suspected of COVID-19 During the Third Wave in Peshawar, Pakistan

Sher Alam
Center for OMIC Sciences Islamia College, Peshawar
Maria Imtiaz
Lecturer, Kohat University of Science and Technology (KUST), Kohat, Khyber Pakhtunkhwa, Pakistan- mariamedico3924@gmail.com
Muhammad Haris
BS MLT, Khyber Medical University, Peshawar
Kaleem Ullah*
Senior Lecturer MLT, Sarhad University Peshawar. Crossponding Author Email: kaleemullah.siahs@suit.edu.pk

Author Details

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Corresponding E-mails & Authors*:
Kaleem Ullah
kaleemullah.siahs@suit.edu.pk

Abstract

Background: Covid-19 is novel corona virus, first emerged in Wuhan, China. From China it spread throughout the world and became global pandemic. During the first and second wave of pandemic the ratio of Covid-19 positive children was low and unpredictable as compared to adult population. At the starting of third wave of Covid pandemic the ratio of Covid-19 positive children becomes also high. It drives the researchers to notice the ratio of positive Covid-19 children in third wave. During the third wave of pandemic the ratio of positive children in Pakistan also rises. In our study we found the clinic epidemiological spectrum and symptoms and its severities in Covid-19 suspected children. We conduct the descriptive cross-sectional study of Covid-19 children in Peshawar, KPK. The study duration was 2 months (from 1st May to 30 June 2026). We collected data of 493 children who were tested for Covid-19 in tertiary care hospital. We include all children up to 15 years of age of both genders. The data was collected by an approved Questionnaire. The data was analyzed with the help of SPSS and MS Excel. We collected data of 493 tested covid-19 children. Out of 493 children, 26 were Covid-19 positive and 467 were negative. Among 26 positive children, 23 were symptomatic and 3 were asymptomatic. The common symptoms were fever,

cough, sore throat, diarrhea, and loss of taste. Mostly these common symptoms were moderate in diagnosed children. Besides these common symptoms some children showed symptoms like chills, runny nose, shortness of breath, Headache, fatigue, abdominal pain, chest pain, joint pain, loss of smell and irritability. According to our study, the ratio of Covid-19 positive was almost 5.27% in Peshawar, KPK. Most of the children were infected by family clustering or close contact with infected patients at home. Some of the positive children were asymptomatic and most of children showed mild to moderate symptoms as compared to adult population.

Introduction:

Coronavirus disease 2019 (COVID-19) is a highly infectious respiratory disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in Wuhan, Hubei Province, China, in December 2019, where clusters of patients presented with pneumonia of unknown origin. Following its rapid global spread, the World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern on 30 January 2020 and subsequently characterized it as a pandemic on 11 March 2020. (1,2) Since then, COVID-19 has resulted in millions of confirmed cases and deaths worldwide, placing an unprecedented burden on healthcare systems, economies, and societies. (3) SARS-CoV-2 is an enveloped, single-stranded RNA virus belonging to the family *Coronaviridae*. The virus is primarily transmitted through respiratory droplets, aerosols, and close contact with infected individuals, although indirect transmission through contaminated surfaces has also been reported. (4,5) The incubation period generally ranges from 2 to 14 days, with a median of approximately five days. During this period, infected individuals may remain asymptomatic while still transmitting the virus to others, making disease control particularly challenging.(6) The clinical manifestations of COVID-19 vary considerably, ranging from asymptomatic infection to severe pneumonia, acute respiratory distress syndrome (ARDS), multi-organ failure, and death.(7) Most infected individuals develop mild to moderate illness characterized by fever, dry cough, fatigue, sore throat, headache, myalgia, and loss of smell or taste. However, elderly individuals and those with underlying medical conditions such as diabetes mellitus, hypertension, cardiovascular disease, chronic respiratory diseases, obesity, and immunocompromised

states are at increased risk of developing severe disease and poor clinical outcomes.(8,9) Several studies have consistently reported fever and cough as the most common presenting symptoms of COVID-19. Huang et al. reported that fever, cough, and dyspnea were the predominant clinical manifestations among hospitalized patients in Wuhan, China.(10) Similarly, Grant et al., in a systematic review and meta-analysis, found that fever, cough, fatigue, and dyspnea were the most frequently reported symptoms, whereas gastrointestinal manifestations such as diarrhea and abdominal pain occurred less frequently.(11) Although respiratory symptoms remain the hallmark of COVID-19, neurological manifestations including headache, dizziness, confusion, anosmia (loss of smell), and ageusia (loss of taste) have also been increasingly recognized.(12) The clinical presentation of COVID-19 has evolved throughout the pandemic due to the emergence of new SARS-CoV-2 variants and widespread vaccination. Earlier variants such as Alpha and Delta were commonly associated with fever, cough, dyspnea, and loss of smell or taste, whereas infections caused by the Omicron variant have been reported to produce relatively milder symptoms, with sore throat, nasal congestion, and fatigue becoming more common while anosmia has become less frequent. (13,14) These variations highlight the importance of continuous monitoring of symptom patterns in different populations and geographical regions. Despite the availability of effective vaccines and improved treatment strategies, COVID-19 continues to pose a significant public health challenge, particularly in low- and middle-income countries where healthcare resources may be limited. (15) Understanding the clinical characteristics and symptom severity of infected individuals is essential for early diagnosis, prompt isolation, effective clinical management, and prevention of disease transmission. Furthermore, identifying the most common symptoms within a local population can assist healthcare providers in recognizing early and allocating healthcare resources appropriately. (16) In Pakistan, COVID-19 has affected millions of individuals since the first confirmed case was reported in February 2020.

Although numerous national surveillance reports have documented the epidemiological burden of the disease, relatively limited studies have comprehensively evaluated the symptom profile and severity of COVID-19-positive patients in different healthcare settings. (17,18) Variations in demographic characteristics, vaccination

coverage, circulating viral variants, and healthcare access may influence the clinical presentation of COVID-19 in different populations. Therefore, local studies remain essential for understanding disease patterns and informing public health interventions. (19) The present study was conducted to assess the clinical characteristics and severity of symptoms among COVID-19-positive patients. Specifically, the study aimed to determine the frequency of common clinical manifestations, including fever, cough, sore throat, shortness of breath, fatigue, gastrointestinal symptoms, loss of smell and taste, and other associated symptoms. The findings of this study will contribute to the existing body of knowledge regarding the clinical presentation of COVID-19 and may help healthcare professionals improve early recognition, patient management, and disease surveillance within the local setting. (20)

Method and Material:

This descriptive cross-sectional study was conducted in Peshawar, the capital city of Khyber Pakhtunkhwa (KPK), Pakistan, over a two-month period from 1 May to 30 June 2026. A total of 493 children (⩽15 years of age) who underwent COVID-19 testing at a tertiary care hospital were included in the study. Children of both genders were eligible for inclusion, while those with documented COVID-19 reinfection or whose parents/guardians declined to provide the required information were excluded. Data on the clinico-epidemiological characteristics, presenting symptoms, and disease severity were collected using a structured, expert-validated questionnaire. The collected data was entered into Microsoft Excel for data management and analyzed using IBM SPSS Statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations (where appropriate), were used to summarize the study variable

Result:

Geographic and Socio-Economic Distribution of COVID-2 Suspected Patients:

We obtained data of 493 Covid-19 tested children. We divided all these cases into two categories based on gender (male and female). Out of 493, 341 were boys and 152 were girls.

Table 1: *Gender Wise Distribution*

		Frequency	Percent
Gender	Male	341	69.2

	Female	152	30.8
	Total	493	100.0

Based on age, we divided all the cases in three groups (0-5 years, 6-10 years and 11-15 years). Out of 493 cases, 180 falls in the age group of 0-5 years, 107 falls in age group of 6-10 years and 206 falls in age group of 11-15 years.

Table 2: *Age Wise Distribution*

		Frequency	Percent
Age Groups	0-5 years	180	36.5
	6-10 Years	107	21.7
	11-15 Years	206	41.8
	Total	493	100.0

Among these cases 1 belong to Hindko community and the remaining 492 were Pashtuns.

Table 3: *Ethnicity Wise Distribution*

		Frequency	Percent
Ethnicity	Pashtun	492	99.8
	Hindko Speaker	1	.2
	Total	493	100.0

Prevalence of COVID-2 Infected Patients:

Out of 493 cases 26 were Covid-19 positive and 467 were Covid-19 negative.

Table 4: *Positive and Negative Cases of COVID-2 Patients*

		Frequency	Percent
Results	Positive	26	5.3
	Negative	467	94.7
	Total	493	100.0

Symptomatic and Asymptomatic Patients of COVID-2 Patients:

Among the 26 participants who tested positive for COVID-19, the majority were symptomatic. Specifically, 23 cases (88.5%) reported symptoms, while only 3 cases (11.5%) were asymptomatic. These findings indicate that symptomatic infections constituted the predominant presentation among the COVID-19-positive individuals in the study, with asymptomatic cases accounting for a relatively small proportion of the

total positive cases. This distribution suggests that most infected participants exhibited clinical manifestations of the disease at the time of diagnosis.

Table 5: *Symptomatic and Asymptomatic Cases in Covid-19 positive.*

		Frequency	Percent
Symptomatic/ Asymptomatic	Yes	23	88.5
	No	3	11.5
	Total	26	100.0

Symptomatic and Asymptomatic Patients of COVID-2 Patients:

Table 6: *Symptomatic and Asymptomatic Cases in Covid-19 Negative*

		Frequency	Percent
Valid	Yes	297	63.5
	No	170	36.5
	Total	467	100.0

Out of 467 Covid-19 negative cases, 297 were symptomatic and 170 were asymptomatic. Among 493, 173 were asymptomatic, the reasons for their testing of Covid-19 include; surgical procedures, dental procedures, vomiting, typhoid, burn patient, septal defects patients, newborn babies, traumatic patients, pneumonia and having positive patients at their home.

Table 7: *Reason for Covid-19 Testing of Asymptomatic Children and their frequency.*

	Frequency	Percent
Surgical procedure	55	31.79
Dental procedure	15	8.67
Parents were covid positive	22	12.71
Vomiting	21	12.13
Trauma	21	12.13
Newborn baby	12	6.93
Typhoid	6	3.46
Septal defects	5	2.90

Burn patient	9	5.20
Pneumonia	7	4.08
Total	173	100.0

Clinical Presentation of COVID-2 Infected Patients:

We collected data of 493 tested covid-19 children. Out of 493 children, 26 were Covid-19 positive and 467 were negative. Among 26 positive children, 23 were symptomatic and 3 were asymptomatic. The common symptoms were fever, cough, sore throat, diarrhea, and loss of taste. Mostly these common symptoms were moderate in diagnosed children. Besides these common symptoms some children showed symptoms like chills, runny nose, shortness of breath, Headache, fatigue, abdominal pain, chest pain, joint pain, loss of smell and irritability.

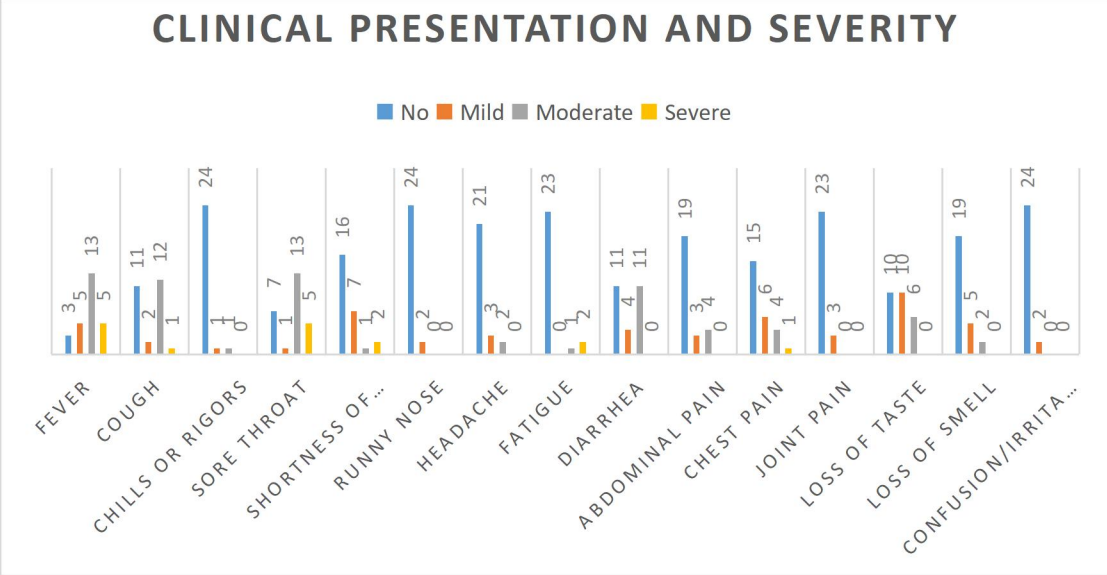

Figure 1. Showing clinical presentation and its severity in diagnosed children.

Discussion:

The present study found that most COVID-19-positive participants experienced mild clinical manifestations, while moderate and severe symptoms were relatively uncommon. This finding is consistent with the study by Huang et al. (20), who reported that fever and cough were the most common symptoms among COVID-19 patients. Similarly, Grant et al. (21) found that fever, cough, and fatigue were the predominant clinical

features, whereas gastrointestinal symptoms occurred less frequently. Fever and cough were the most frequently reported symptoms in the present study, supporting the findings of Huang et al. (20) and Tenforde et al. (22), who identified these symptoms as the most common presentations of COVID-19. In contrast, chills, sore throat, and runny nose were less common, which is consistent with the systematic review by Grant et al. (21). Shortness of breath was observed in only a few participants, indicating that severe respiratory involvement was uncommon. This finding agrees with the NIH COVID-19 Treatment Guidelines (23), which report that only a minority of patients progress to severe respiratory disease. Likewise, diarrhea and abdominal pain were infrequent in the present study, similar to the findings of Sultan et al. (24), who reported that gastrointestinal symptoms are less common than respiratory manifestations. Loss of taste and smell occurred in only a small proportion of participants. This differs from the early findings of Lechien et al. (25), who reported a high prevalence of olfactory and gustatory dysfunction, but agrees with the more recent study by Menni et al. (26), which found that these symptoms have become less common with newer SARS-CoV-2 variants. Overall, the predominance of mild symptoms in this study is consistent with the findings of the World Health Organization (27), which states that most COVID-19 infections are currently mild, particularly among vaccinated populations. These findings emphasize the importance of early recognition of common symptoms such as fever and cough while remaining alert for patients who may develop more severe diseases.

Conclusion:

Covid-19 first emerge in China; from there it spreads throughout the world. At first and second wave of Covid-19 the ratio of positive children was very low and unpredictable as compared to adults and old ages people. At third wave of Pandemic frequency of Covid in children raised which drives the researchers to notice. According to our study and other published journals the ratio of Covid-19 positive children is almost 5.27%. Most of the children were infected by family clustering or having infected people in their family/relatives. Some of the diagnosed children were asymptomatic and most showed mild to moderate symptoms as compared to adult or old aged people.

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