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COVID 19 in children: Characterization of the Pediatric disease based on five months data from a district of eastern India.

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Abstract:
Introduction: *As of now, the total number of people affected globally by novel Corona Virus Disease is over 28 million with death of 903,000 cases since the virus was identified in November 2019 [1]. The preliminary statistics have been focused on severe respiratory manifestations, which are seen mostly in adults, with very little initial data on the burden of COVID -19 in Pediatric population. Children may play a major role in community based viral transmission.[2] there is also evidence that fecal shedding occurs in the stool for several weeks following diagnosis, leading to concerns about feco-oral transmission of the virus.****Method:*** *Data regarding COVID-19 positive cases from the last week of March 2020 to second week of August 2020 were collected in MS excel sheet. The data were analyzed in MS Excel software only.* ***Result:*** *Within 1568 patients, 95 patients (6.05%) belonged to the Pediatric age group. Out of a total of 95 confirmed patients 66 (69.5%) were from the rural areas, whereas 29 patients belonged to the urban areas. Among 95 affected children, 26 (27.4%) had a prior history of travel or history of travel in their family prior to testing. Among 95 covid-19 positive children, majority (53; 55.78%) were asymptomatic and was tested because of having contact with a positive and symptomatic Covid-19 patient. Rest of the Children (42;44.2%) were symptomatic (with fever being the most common presenting symptom, followed by body ache, sore throat and cough). One patient developed Acute Respiratory Distress Syndrome (ARDS) with multi-organ-dysfunction.* ***Conclusion:*** *The burden of COVID-19 is low in pediatric population compared to the adult. Majority of the children affected with COVID-19 are asymptomatic. The current public health activity of contact tracing is yielding results and it should be continued till the pandemic ends.*

Key Words: *Asymptomatic infection; ARDS; Fecal-oral transmission; Multi-organ failure*

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I. Introduction

As of now, the total number of people affected globally by novel Corona Virus Disease is over 28 million with death of 903,000 cases since the virus was identified in November 2019 [1]. The preliminary statistics have been focused on severe respiratory manifestations, which are seen mostly in adults, with very little initial data on the burden of COVID -19 in Pediatric population. [2,3] In a study by Dong et al., [4] researchers found that only 4% of virologically confirmed COVID-19 cases were asymptomatic. However, this rate almost certainly underestimates the true rate of asymptomatic infection, because many children who are asymptomatic were unlikely to be tested. Among the symptomatic patients, 5% showed dyspnea or hypoxemia

(a lower percentage in comparison to adults). Only 0.6% progressed to acute respiratory distress syndrome or multi organ failure (a rate that is again lower than that seen in adult population).[3] The study showed preschool aged children and infants were more likely to have severe clinical manifestation. However, more data is urgently needed to get a clearer picture about Pediatric COVID-19 infection. Furthermore, although the focus for pandemic studies is often on the impact on the economically productive age groups, rigorously identifying the impact of COVID-19 on children will be important to accurately model the pandemic and help us to take preemptively measures to lower morbidity and mortality among children. Furthermore, Children may play a major role in community based viral transmission.[2] there is also evidence that fecal shedding occurs in the stool for several weeks following diagnosis, leading to concerns about feco-oral transmission of the virus, particularly for infants and children who are not toilet trained. [5,6]

II. Methods:

Data regarding COVID-19 positive cases from the last week of March 2020 to second week of August 2020 were collected in MS excel sheet from the office of the chief medical officer of the present at the district headquarters after proper approvals from the district authorities. The data were analyzed in MS Excel software only.

III. Results:

Data of 1568 patients with confirmed COVID-19 positive results were analyzed. Within 1568 patients, 95 patients (6.05%) belonged to the Pediatric age group (i.e. from 1 month to 18 years of age. Further stratification of the pediatric subpopulation is tabulated below.

Table 1: Age-group of 95 pediatric COVID-19 patients

Age Group	Number (N=95)	(Percentage)
Infancy (1 m to 1 yr)	4	(4.2%)
Toddler (3-4 yrs)	8	(8.4%)
Preschooler (5-6 yrs)	9	(9.5%)
School Age (6-12 yrs)	30	(31.5%)
Adolescent (13 -18 Yrs)	44	(46.3%)

The sex ratio among confirmed COVID-19 positive pediatric patients is male: female 1.38:1.

Out of a total of 95 confirmed patients 66 (69.5%) were from the rural areas, whereas, 29 patients belonged to the urban areas.

Among 95 affected children, 26 (27.4%) had a prior history of travel or history of travel in their family prior to testing. The state to which either the child or a close family member visited in the previous 14 days of the test results are shown in table 2.

Table 2: States where patient or close relative visited in the previous 14 days of the result

Region/ State	Number of patients n=26
Uttarakhand	2
New Delhi	1
Maharastra	9
Delhi	8
Gujrat	1
Haryana	4
Andhra Pradesh	1
Total	26

Among the rest of the 69 patients, none has history of recent travel, thus can be presumed to get the infection from within the district. Although 4 patients had a history of travel to another district within the state prior to being tested.

From the total of 95 patients, 71 resided within the containment zones, whereas 24 patients were from non-containment area.

Among 95 covid-19 positive children, majority (53; 55.78%) were asymptomatic and was tested because of having contact with a positive and symptomatic Covid-19 patient. Rest of the Children (42;44.2%) were symptomatic (with fever being the most common presenting symptom, followed by body ache, sore throat and cough). One patient developed Acute Respiratory Distress Syndrome (ARDS) with multi-organ-dysfunction.

Home care was suggested for the majority of patients (48;50.52%) with subsequent complete recovery. Whereas, 6 patients were sent to safe home, due to lack of measures at home for keeping the patient isolated. All the 6 patients kept at the safe home recovered completely. Fifteen patients were admitted to SARI (Severe Acute Respiratory Illness) hospital. Another 21 children required admission to district COVID-19 Hospital and 5 patients required admission to COVID-19 facilities at the state capitals. (One patient required Pediatric Intensive care facility (PICU) Care. None of the patients required dialysis facility.

IV. Discussion:

In the present study, the adolescents are found to be the most commonly affected age group by COVID-19 among the pediatric population (44/95; 46.3%), whereas the school aged children are the second most affected age group (30/95, 31.5%). Infants are found to be the least affected age group among pediatric sub-population. This is probably due to more chance of exposure among older children as they are more likely to indulge in outdoor activities than the younger age groups. The sex ratio of the affected children is skewed in favor of the male children (1.38 male: 1 female) as boys tend to go out more than girls in our society.

The data also shows, the majority of children are from rural areas (66;69.5%) as compared to urban areas (29; n=95). This can be explained by the fact that there was more family history of recent travel among patients in the rural (as migrant workers) areas as compared to patients from the urban areas, as the primary and initial sources of the COVID-19 is thought to be from outside the state of West Bengal, at least for the initial period of the epidemic. This argument can be further strengthened by the fact that, data from the early period of the study (first 3 months) showed an increased number of covid-19 patients having history of recent travel (31/40) as compared to the later part (subsequent 2 months) of the study (1/46)

The majority of positive COVID-19 patients had history of travel to Maharastra (9/26).

The present study shows that the majority of children with COVID-19 positive results were asymptomatic (53, n=95). This is in contrast to the findings published by Dong et. al, [4] who reported 4% of virologically confirmed COVID-19 patients were asymptomatic. The higher number of asymptomatic patients in the current study is probably due to active contact tracing by the local health authorities.

V. Conclusion:

The burden of COVID-19 is low in pediatric population compared to the adult. Majority of the children affected with COVID-19 are asymptomatic. The current public health activity of contact tracing is yielding results and it should be continued till the pandemic ends.

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