Introduction

Coronavirus pandemic has impacted whole world badly. It got spread rapidly from China to various part of the world within short span of time. India also got affected seriously by the virus as number of cases are increasing rapidly. More than 10 million cases till now (as on 26th December 2020) and more than 1.4 lakh patients got succumbed due to novel coronavirus (COVID-19).

To combat the initial spread of the virus various strategies have been adopted by the Indian government to mitigate this disaster. India is one of the countries who implemented country-wide lockdown very early as a preventive measure. Lockdown was announced in last week of March and subsequently it was increased further up to 30th May in phased manner, taking various factors into account. During the lockdown period, number of pediatric emergency visits was reduced and also lead to delayed presentation. Parents should be informed about utilizing telemedicine services available during this period and avoid delaying in going to hospitals in emergency conditions.
overall health of general population.\textsuperscript{18} Children in particular are more vulnerable for effects on health due to their limited capacity to understand and express. COVID-19 pandemic has raised various challenges in the care of the children in community as well as health care settings.\textsuperscript{19} We expect that lockdown has also impacted health-seeking behavior of patients. With this study we aimed to assess the impact of lock down on Pediatric emergency attendance. Thus, we proposed this study to evaluate the pattern of pediatric emergency visits during this lockdown period to understand the implications of lockdown on health and diseases in children.

Methods

This was hospital-based retrospective study conducted at Pediatric emergency in a tertiary care setting. The study was approved by the Institutional ethical committee of our institute.

Data were collected from patient case records who visited Pediatric emergency at our institute during the month of April and May in the year 2019 and 2020. Due to retrospective nature of the study, consent from the participants could not be. To protect the privacy and confidentiality of the participants, data was anonymized. All children with age of 0 days to 18 years, who visited emergency were included. To avoid seasonal variation on footfall of patients, data from same months of this year and preceding years were compared. Data regarding clinical characteristics like triage category at presentation as per World Health Organization, Emergency Treatment and Triage protocol (WHO, ETAT), diagnosis, primary system involved, nature of illness (trauma vs. non trauma) and outcomes were recorded in Microsoft Excel sheet 2013 (Microsoft Corporation, Redmond, USA).

The data were analyzed using the Microsoft Excel 2016 and SPSS v. 23.0. Appropriate figures have been prepared and a Chi-square test was applied to assessment the significance between different proportions. Percentage change in the number of the cases was calculated for each category by using the following formula. Percentage change = (Cases in 2019 - Cases in 2020)*100/ Cases in 2019.

Results

Amid COVID-19 pandemic, complete lockdown was insisted from 25 March to 30 June 2020. During two months period 506 children visited emergency out of them 64% were male [Table 1]. However, in the previous year 792 patients were seen in emergency during same duration. There was 36% reduction in the foot fall compared to previous year and approximately 50% reduction as compared to previous months of same year [Figure 1]. All children were screened at COVID-19 screening area, 32 children were screened as COVID-19 suspect as per India council for medical research (ICMR) criteria and 8 children were confirmed COVID-19 cases (RT-PCR positive). Sixteen percentage of children were triaged as emergency and priority (as per ETAT protocol) which was significantly less in number as compared to previous year. There was 82% reduction in the patient from emergency category and 61% reduction in priority category. There was significant increase in proportion of children with underlying respiratory ($P = 0.001, C.I 2.66-11.6$), haematological emergencies ($P < 0.001, C.I 2.99-9.23$), whereas children with gastrointestinal emergencies were decreased significantly compared to previous year ($P = 0.001, C.I 4.09-13.03$). Twelve percentage of children presented with underlying unintentional injury, which was comparable to the previous year in spite of decrease in total patient number [Table 2]. However number of road traffic accident (RTA) cases were reduced markedly by 93% ($P = 0.005, C.I 0.6–3.06$). Deaths were similar in both years. (April–May 2019 – 3, April– May 2020 – 4).

Discussion

Our hospital is a tertiary care hospital with 750 functional beds at present. In COVID-19 Pandemic we created approximately 300 dedicated beds for care of the COVID infected patients.

During this pandemic we have created two-level triage system to screen patients suspected to be infected with COVID-19. At level one triage, dedicated team for COVID-19 screening was deployed with complete personal protective equipment’s. This team was the first contact of the patient coming to emergency. As per the ICMR guidelines, suspected patients were screened and were isolated to dedicated area for testing and further management. Patients who were not meeting the criteria were sent to second-level triage and management was done accordingly.

We expected increase in emergency footfall at government tertiary care hospitals as many private hospitals were shut down and routine outpatient services were not functional due to COVID-19 pandemic. As emergencies are inevitable and patient has to visit to the hospital for treatment whenever needed. On contrary, we observed markedly decreased attendance in the paediatric emergency during lockdown period. This decrease in the attendance can be attributed to unavailability of transport services and complicated process of getting permission for inter-city travel during lockdown period. So parents might have preferred consultation from nearby health facilities or through telemedicine. This decrease in number can be also be accredited to some extent to fear of contracting infection while visiting hospital. This fear has led to the delayed presentation of the diseases and landing in to serious complications. Early reports from Italy reported decrease in the numbers of paediatric cases in their emergencies and noted to have delayed presentation during lockdown in their country.\textsuperscript{6,7} Raucci et al. reported decrease in the emergency visit by 56-62% at 2 centres in Italy and similarly 52% decline in the attendance was noticed at Jerusalem, Israel.\textsuperscript{8,9} In a centre from South India observed 65% decline in the emergency visit in Children.\textsuperscript{10} A multi-centre survey from United Kingdom reported that 4% of children...
were brought delayed to hospital due to COVID-19 fear during lockdown period.\[11\]

The decrease in emergency visits can also be explained by reduction in the number of pediatric emergencies which can be credited to improvement in social behaviour practices like frequent hand washing, physical distancing, avoidance of street food. Number of RTA cases were also noted to be decrease because of limited traffic on the road. In addition availability of telemedicine service might have reduced the proportion of children with que triage category.

We assume home as a safest place for children. On sub analysis, we were surprised to found that there was minimal reduction in the unintentional injuries (10%) despite children being at home. This can be attributed to explorative nature of the children which make them at risk for such injuries even in the safest environment. We encountered increase in number of foreign bodies and accidental ingestions during lockdown period. Because of no traffic and minimal outdoor activities, we observed significant reduction in RTA cases (93%). With respect to involvement of underlying primary organ system, cardiac, neurological cases were marginally decreased whereas gastrointestinal cases were reduced by 57.8%. We expected significant reduction in respiratory infection due to increased utilization of face mask and improved hand hygiene practices however the proportion increased by 7%. There was increase in the proportion of haematological emergencies comparative to previous year and majority of them were newly diagnosed malignancies. We assume that prior to lock down, most of such patient preferred to go to cancer hospital in nearby state.

However, because of non-availability of travel services due to lockdown they were unbele to travel and also partly because of recent availability of Paediatric Haemato-Oncological services at our institute, such patients have increased in number. We also encountered delay in presentation of children with underlying emergencies because of fear of COVID-19. Parents have waited for spontaneous resolution of symptoms and presented to hospital when symptoms got worsened.

We also come across various challenges in managing children during the covid pandemic. Non-covid respiratory issues are far more common than COVID pneumonia in children which created dilemma during screening at Level 1 triage. In addition to that COVID-19 in children are variable, hence they may be asymptomatic carriers, so caregivers should use proper personal protective equipment during the care of children.

**Limitations**

As this was a retrospective study and was conducted over very small period of time; hence, the results cannot be generalised. Multicentre study will be required to understand the impact of lockdown on healthcare-seeking behaviour precisely. Additionally, to understand whether lockdown has helped the general population by preventing infection from COVID-19 or has increases the mortality due to non-COVID conditions,

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### Table 1: Age and Sex wise Distribution of Children visited emergency during May- June 2019-20

| Year | Month | Age (in years) | Male n (%) | Female n (%) | Male n (%) | Female n (%) | Male n (%) | Female n (%) | Male n (%) | Female n (%) |
|------|-------|----------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|
| 2019 | April | 0-1            | 69 (26.8)  | 34 (23)      | 54 (25)    | 42 (27.5)    | 34 (21.3)  | 16 (20)      | 34 (20.3)  | 13 (13.1)    |
| 2020 | May   | 1-5            | 20 (7.7)   | 26 (17.6)    | 30 (12.8)  | 24 (15.6)    | 46 (28.9)  | 23 (28.8)    | 51 (30.35) | 32 (32.5)    |
|      |       | 5-12           | 110 (42.8) | 56 (37.8)    | 78 (33.3)  | 55 (35.9)    | 35 (22.0)  | 16 (20)      | 32 (19.04) | 23 (23.3)    |
|      |       | 12-18          | 58 (22.5)  | 32 (21.6)    | 72 (30.7)  | 32 (20.9)    | 69 (43.4)  | 25 (31.2)    | 51 (30.35) | 33 (33.3)    |
| Total|       |                | 257        | 148          | 234        | 153          | 159        | 80           | 168        | 99           |

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### Table 2: System wise distribution of patients during May-June 2019-20

| System Involvement | 2019 | 2020 | P  | CI  |
|--------------------|------|------|----|-----|
| Respiratory problems | 127  | 117  | 0.0015 | 2.67-11.62 |
| Haematological      | 39   | 55   | 0.0001 | 2.96-9.23  |
| Gastrointestinal    | 204  | 86   | 0.0003 | 4.09-13.03 |
| Cardiac             | 12   | 10   | 0.5319 | -0.97-2.20 |
| Neurological        | 63   | 59   | 0.0255 | 0.44-7.23  |
| Endocrinology       | 16   | 14   | 0.3808 | -0.91-2.73 |
| Renal Emergencies   | 52   | 32   | 0.8584 | -2.64-2.90 |
| Unintentional Injuries | 76  | 61  | 0.1456 | -0.86-6.19 |
| RTA                 | 16   | 1    | 0.0049 | 0.62-3.06  |

CI - Confidence interval, RTA - Road traffic accidents

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**Figure 1: Trend of pediatric emergencies in 2019 and 2020**
Choudhary, et al.: Paediatric emergency attendance during lockdown in India

this has to be investigated by doing mortality cause analysis of deaths occurred during this period. It is also very important to inform general population to utilise telemedicine services for health-related issues if they fear to go to hospital and avoid delaying the hospital visits, if required. As we encountered high proportion of unintentional injuries and sick children, primary care givers should be prepared to handle such emergencies.

Conclusion

COVID-19 pandemic has affected the health-seeking behaviour of general population. Lockdown has affected the pattern of disease presentation in a paediatric emergency. There was decrease in emergency visits during lockdown period which can be explained by travel restrictions, non-availability of transport and fear of contracting infections. However, unintentional injuries were still common during lockdown when children were at their home. So parents need to be aware about keeping safety precaution for children at home. General population should be informed about utilising different health services available during this period and avoid delay in going to hospitals in emergency conditions.

Ethical approval

Ethical clearance was obtained from Institute ethical committee. IEC, AIIMS Jodhpur, AIIMS/IEC/2020-21/3051 Dated 10/06/2020.

Declaration of patient consent

In view of retrospective nature of the study, consent of the participants was not required.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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