Original Research Article

IMPACT OF COVID-19 ON ADMISSION INTO THE DEPARTMENT OF PAEDIATRIC BINGHAM UNIVERSITY TEACHING HOSPITAL (BHUTH) JOS.

Abstract.

Background: The Coronavirus disease 2019 (COVID 19) pandemic has a significant impact on global health systems, not only in terms of the number of people infected with the disease, but also in terms of patients with other diseases.

Introduction. The COVID-19 pandemic, as well as the measures taken to combat it, such as complete lockdown, has a significant impact on health seeking behaviour and the health care-delivery system. Studies have shown that while COVID-19 confirmed cases have gradually increased, visits to hospitals for non-COVID infections have steadily decreased. Concerns are arising about the potential harmful impact of COVID-19 response strategies on the management of other medical disorders.

Objective: To assess the effect of COVID-19 pandemic on admissions into the Department of Paediatrics Bingham University Teaching Hospital, Jos, Plateau State.

Methodology: We retrospectively ~~analyzed~~ evaluated the hospital out-patients and admission records into the Paediatrics department of Bingham University Teaching Hospital from April 2019 to March 2021. The records from one year pre-COVID and one year COVID period were compared. The data was analyzed using SPSS version 22.

Results: The total number of pediatric patients seen at the Paediatrics department (POPD/EPU/SCBU/PMW) decreased by 28 percent, from 5657 in 2019/2020 to 4079 in 2020/2021 (P <0.001). The number of patients hospitalized in the Paediatrics medical ward (PMW) declined by 19 percent, while the number of admissions in the Special Care Baby Unit (SCBU) declined by 10 percent. The overall number of consultations in the emergency department unit (EPU) decreased by 23 percent. The total number of patients seen and admitted in the various units of the paediatric department decreased during the lockdown period by 60 percent compared to the pre-lockdown period.

Conclusion: The pandemic and the precautions taken in response to COVID-19 ~~have~~ resulted in a significant reduction in pediatric admissions for diseases other than COVID-19.

Keywords: Admission, Bingham University, Covid-19, Paediatrics, Lockdowns

Introduction

The COVID-19 pandemic has adversely affected health-care systems globally (1). Throughout the year 2020, the number of people infected with coronavirus grew. Since then, the virus has seriously affected the economy and health-care systems all over the world (2).The rapidly expanding number of infected individuals requiring urgent care, as well as the need to restrict disease spread and quickly detect and isolate new cases, overburdened hospitals and community agencies. Most hospitals took extreme measures in response to this unprecedented situation, including resource reallocation, ward repurposing, and job reorganization (3-4). Simultaneously, the governments used lockdowns to try to decrease community transmission by restricting people's movements and activities (5-7) .Such limits have major health, social, and economic consequences.

These measures, which were driven by the absolute priority placed on epidemic response, resulted in frequent delays or pauses in routine care, particularly for patients with non-communicable diseases (NCDs). Changes in regular care could have an influence on exacerbating the socioeconomic, clinical, and economic consequences of NCDs (8-9).

Lockdowns are significant measures that are predicted to have an impact on all transmissible infectious illnesses, not just COVID-19 transmission. This has already been documented in similar circumstances (10). This effect may be especially prominent in the field of pediatrics, where infectious disease is responsible for 28% of diagnoses in some EPUs (11). Lockdowns have resulted in reduction in the total number of pediatric hospitalizations and visits to the POPD/EPU, as planned (12-14). However, it is unclear whether this decline is related only to a reduction in transmissible illnesses or also to changes in healthcare utilization behavior. For example, there have been many reports of people avoiding treatment because they are afraid of being in a hospital, which can be dangerous (15-17).

Studies done in developed countries like Italy, United States of America (USA), United kingdom (UK) and Netherlands, all showed significant reduction in visits to various departments of hospitals (18-21). In Italy, Raucci et al (18) showed a decrease in the number of emergency departments' (ED) visits by children. Similarly, Nourazari et al (19) obtained a decrease in the number of children being admitted in the hospitals in USA during this period. There was also a decrease in the number of surgical admissions in the UK in the study done by Callan et al (20), while the study by Kruizinga et al (21) documented a reduction in admission for both infectious and non-infectious diseases during the COVID-19 period lockdown.

The case is not so different in developing countries. Zakaria et al from Egypt also found a significant decrease in the number of patients coming in for endoscopy investigation during the COVID-19 lockdown (22). In India, Nittul et al reported a reduction by 31% in the number of ED admission during the COVID-19 lockdown (23). There was also a massive reduction of 74% in the paediatric consultation in Morocco during the COVID-19 lockdown (24).

However, a study done by Monica et al in the psychiatry department in UK showed a slight increase in the number of psychiatry patients admitted during the COVID-19 period compared to the pre-COVID-19 period (25).

The impact of lockdown measures during the COVID-19 pandemic on POPD/EPU/PMW/SCBU was studied in this study

Methodology

Study setting

The research was carried out at the Paediatrics department Bingham University Teaching Hospital Jos. The Paediatrics department has a 46-bed capacity, which is divided into SCBU, PMW, and EPU. It's an academic tertiary hospital that cares for children from all around Jos metropolis and beyond because it is a referral center.

Materials and method

The study was retrospective. It compared two phases, which will be referred to as the pre-pandemic period from April 2019 to March 2020, and the pandemic period which started in Plateau State April 2020 to March 2021. Data of all patients seen in the POPD, PMW, EPU and SCBU were extracted from the hospital records. Data obtained included patients' demographics (sex and age at admission), date of admission, diagnosis and discharge dates were collected and recorded.

Data analysis

Categorical data was presented as counts and percentages. When comparing the two periods, t test was used to determine statistical differences for continuous variables. For categorical variables, Chi- test was utilized. Statistical significance was defined as a two-sided p-value of less than 0.05. SPSS version 22 was used for all statistical analyses.

Ethical approval and consent

Ethical approval was obtained from the Health Research Ethics Committee (HREC) of BHUTH

Results

The overall number of patients seen in all the units (POPD/EPU/PMW/SCBU) in 2020/2021 COVID period was significantly lower than in the 2019/2020 pre-COVID period. (4079 vs. 5657), representing a 28 percent decrease in patients coming to the Paediatrics department ($t=10.4$, $p<0.001$). Table 1

Table 1. Number of patients admitted 1 year pre-COVID and 1 year during-COVID

Variables	Pre-C	mean	S.D	C-peri	mean	S.D	% Dec	t-test	p-val
POPD	5011	417.0	141.0	3539	295.0	116.0	29.4	42.5	<0.000
PMW	285	23.8	10.1	232	19.3	8.7	18.6	5.3	<0.000
SCBU	238	19.8	8.1	213	17.8	5.5	10.5	3.0	0.003
EPU	123	10.3	7.3	95	7.9	6.4	22,8	2.5	0.01
Total	5657	1414.3	2077.4	4079	1019.8	1455.4	27.9	10.4	<0.001

C- COVID, Dec- Decrease, peri-period, S.D- standard deviation, val-value

The number of patients evaluated in POPD/EPU/ PMW/SCBU every month in each period was analyzed using a line graph, and the results showed that there was a continuous decrease in the total number of patients reviewed per month in COVID period compared to pre-COVID period.

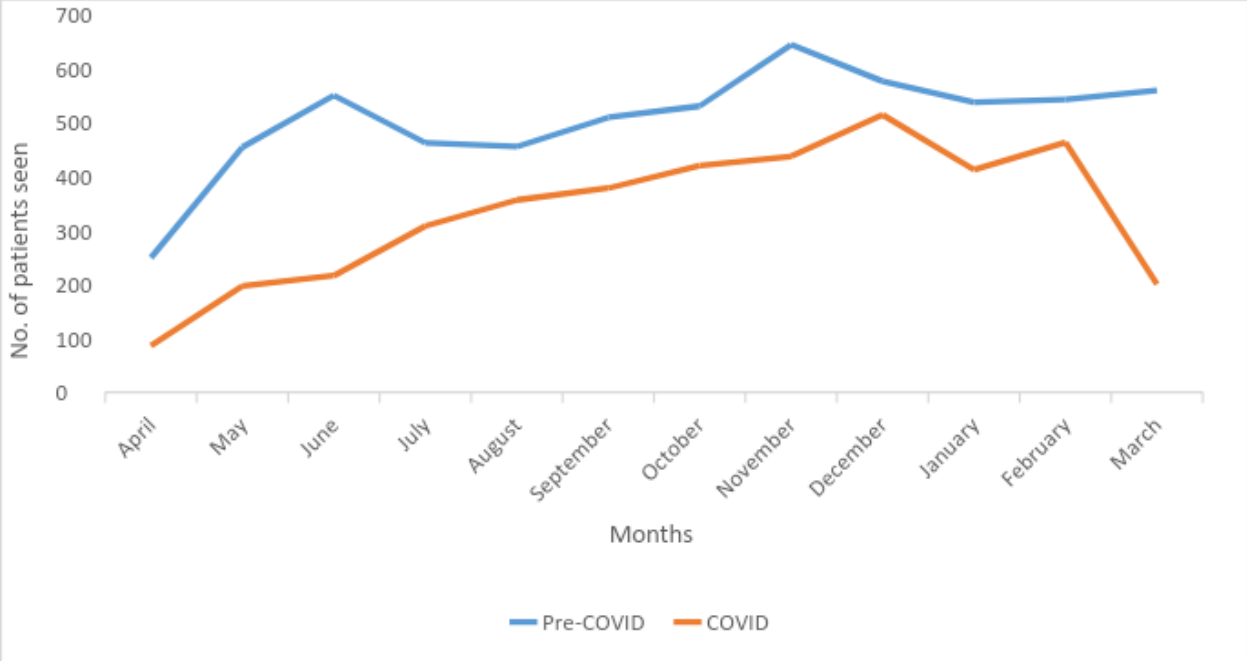

Figure1. Trend in the number of admissions pre-COVID and COVID period

The number of patients seen 3-months pre-COVID was drastically reduced compared to 3-months COVID period during the intermittent lockdown.

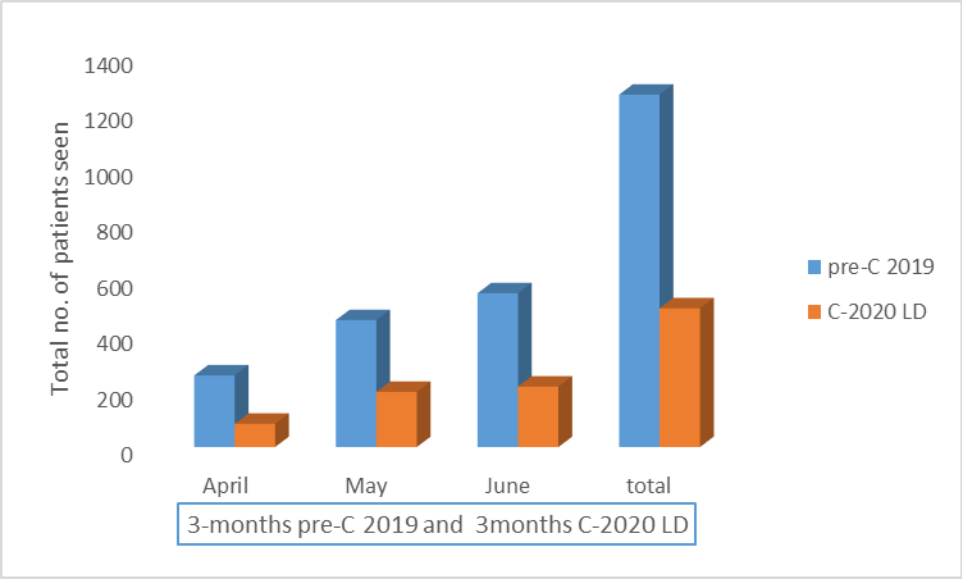

Figure2: Difference in patient turn over 3-months pre-COVID 2019 and 3-months COVID Lockdown 2020.

The diagnoses of patients seen in POPD/EPU/PMW for a 3-month duration prior to COVID in 2019 and 3 months during the Lockdown. Malaria, Respiratory tract infection (RTI), and acute diarrhoeal disease (ADD) were the most common diagnoses. Others comprising over 30 diagnoses included: vaso-occlusive crises in sickle cell anaemia, sepsis,Enteric fever, urinary tract infection, dermatitis,etc (see Table 2). There was a significant statistical difference. Chi square($\chi 2$) of 80.3, p=<0.000

Table 2. Common Diagnosis made 3months pre-COVID 2020 and 3months COVID intermittent lockdown 2020

Variables	Malaria (%)	RTI (%)	ADD (%)	Others (%)	Total (%)
3mths pre-LD	416 (22.0)	533 (28.3)	120 (6.4)	818 (43.3)	1887 (81.4)
3mths inter-LD	184 (42.8)	78 (18.1)	19 (4.4)	149 (34.7)	430 (18.6)
Total	600 (25.9)	611 (26.4)	139 (5.9)	967 (41.7)	2317 (100)

URTI- Upper respiratory tract infection; ADD- Acute diarrhoeal disease; mnths- months; LD- Lock down; Inter-Intermittent.

The mortality statistics from all the paediatric units 3 months pre-COVID 2020 and 3 months intermittent lockdown due to COVID, documented 22 deaths in the 3 months pre-COVID 2020 period (mortality rate of 1.1 percent). There were 15 mortalities in the 3 months COVID

intermittent lockdown period in 2020 (mortality rate of 3.3 percent). None of these deaths were linked to COVID-19.

Table 3. Number of mortality seen 3 months pre-COVID 2020 and 3 months COVID Lockdown 2020.

Variable	Total no. Of patients seen	No. Of deaths	Mortality rate %
3 mnths Pre-COVID	1949	22	1.1
3 mnths COVID-LD	472	15	3.3

Discussion

The COVID-19 pandemic came with a lot of negative impact on the health sector. In this study, there was a significant reduction in the number of patients presenting to the different units of the paediatrics department. Several reasons could explain this phenomena: the restriction of movement could be a significant factor in reducing the number of children being brought in by their parents, the parents of the sick children could have been infected with the disease making them unavailable to perform their duties, the low flow of cash due to closure of a lot of business premises could make the parents think that they should focus more on food than taking their sick children to the hospital. It is also possible that the parents of the sick children could have been infected with the disease making them unavailable to perform their duties.

The finding of reduced number of patients seen in the department is similar to what was documented in various studies all over the world (24,19,26,18). Studies in Morocco, USA, China and Italian hospitals showed a significant reduction in the number of patients seen the Paediatrics emergency department, neonatal unit and other units of the hospitals. (24,19,26,18).

There was a one third and a one-fifth decrease in the total number of patients seen in the paediatrics outpatients and emergency paediatric unit visits, after comparing the pre-COVID and the COVID period. The reduction in patient turn out is comparable to what was obtained by Bewal et al and Mekaoui et al in India and Morocco respectively (23-24).

The most prominent diseases seen in the paediatrics department pre-COVID were Malaria URTI and ADD, these were similar to what was obtained during the COVID lockdown period.There was no difference in the most prominent diseases seen both pre- COVID and during COVID lockdown. This could be explained by the fact that those are the commonest diseases seen in children living in the tropics (27-28). However, the proportion of patients admitted with malaria was relatively higher in the COVID lockdown period compared to the pre-COVID period despite the low turn out of patients during the COVID lockdown period. The significant increase in the proportion of patients admitted with malaria during the COVID lockdown period could be explained by the fact that malaria is seasonal, and the lockdown period was at the peak of the malaria season (29).

The relative decrease in the number of patients seen with respiratory tract infection may possibly because the commonest cause of RTI are mostly viral and therefore, can be transmitted easily by airborne droplets. However, due to preventive measures like wearing of masks, hand sanitization, restriction of large gatherings, school closure and lock downs that were put in place to prevent the spread of COVID-19. These measures could have reduced the incidence of RTI (30).

The finding of similar disease pattern in the present study contrasts with observations by Davies et al, where there was a change in the disease pattern pre-COVID and during COVID (25). The number of mental health admissions increased, especially mental illness that is related to increased alcohol Ingestion.. This could be explained by the fact that alcohol ingestion is not common among children, furthermore, this study was in children and the three commonest diseases seen during the pre-COVID and COVID lockdown period were the commonest diseases seen in children living in the tropics (28-29).

While this study did not explore the underlying cause of death, the increased mortality rate during the Lockdown period may be due to late presentation as a result of restriction in movement, difficulty in getting means of transport to the hospital and a possibility of fear of contracting COVID-19 when they come to the hospital. Lazzerini et al also found that delay in presentation to the hospital led to the deaths of some of their patients during the COVID-19 lockdown period in Italy (13).

CONCLUSION

The COVID-19 epidemic has far-reaching implications that go beyond those affected by the disease.The impact of stringent lockdowns on young children's access to and use of healthcare in low-income settings for acute diseases is worrisome. Any approach aimed at addressing such health crises should include the prevention of collateral damage to individuals with other conditions.

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