Original Research Article

An Impact Study of the COVID-19 Pandemic on Routine Paediatric Immunisation in Nigeria: Recommendations during a Pandemic

Abstract:

Background:

The COVID-19 pandemic spread to Nigeria, resulting in a nationwide lockdown from 30th March 2020. Consequently, there was enormous impact on the health and socio-economic facets of life affecting individuals, families, and communities. A key component of primary health care that was affected was routine childhood immunisation which is one of the fundamental pillars of the Nigerian government's child health care policy.

Methods:

Primary data were collected using semi-structured questionnaires administered to 150 parents or caregivers across the childcare and wellness clinics of four selected secondary health facilities in the FCT from January to June 2020 (January to March representing the pre-lockdown period while April to June, the lockdown period). Secondary data were collected from immunisation records of these facilities. The mean changes in the immunisation coverage of pre-lockdown period were compared with the lockdown period using student *t*-test. A p-value of < 0.05 was considered statistically significant.

Results:

There was a significant decline of 19.1% in the total number of immunizations given in the pre- and during the lockdown period [t=2.86, p=0.035]. This reduction was diverse across all districts and all vaccine antigens. The highest decline was seen for the 6 weeks' vaccines (31.2%), followed by the 10 weeks (28.7%). Fear of contracting COVID was the commonest reason for missing vaccines (26.4%) followed by lack of transportation money (5.7%). For those that presented, the main reason for not getting vaccinated was that the vaccination centres were closed (55.6%). About 46.9% and 34.5% of the participants responded that they would prefer

home-visits by the healthcare workers and hospital 'drive-by' for delivery of routine vaccination during a pandemic.

Conclusion:

The COVID-19 pandemic significantly affected the routine immunisation in the FCT. Routine immunisation services should continue during pandemics while infection prevention and control measures are strictly observed by vaccinators. Appointment-based visits can be scheduled using phone calls, emails, and SMS to have less people in waiting areas. Drive-by and home-based services are acceptable alternatives for parents and caregivers in addition to fixed-site vaccination activities during a pandemic.

Keywords: COVID-19 Pandemic, Impact, Routine Immunisation, Paediatrics, Recommendations.

Introduction

Since the 1918 influenza pandemic, the world has not seen a greater devastating pandemic over a short interval like that witnessed with COVID-19.[1] The COVID-19 pandemic originated in the Chinese Wuhan city of Hubei province in late December 2019.[2,3] The Wuhan Municipal Health Commission on the 30th December 2019 reported to the WHO a cluster of twenty-seven pneumonia cases of unknown aetiology including seven severe cases which were linked to the Huanan seafood wholesale market, a wholesale fish and live animal market in Wuhan.[2] A month later the WHO declared the outbreak a public health emergency of international concern and by 11th March 2020, the WHO labelled the outbreak a pandemic.[4,5] As of 10th August 2022, there have been 584,065,952 confirmed cases globally with 6,418,958 deaths.[6]

In Nigeria, the first case of COVID-19 was reported on the 27th February 2020 and as of 1st August 2022, the Nigerian National Centre for Disease Control (NCDC) confirmed 261,473 cases with 3,147 deaths.[7,8] The Nigerian government on 30th March 2020 declared a nationwide lock down with immediate effect in the two states of Lagos and Ogun, and the Federal Capital

Territory. The lockdown was further extended to involve other states in order to slow the spread of the virus.[9] There was a ban on social and economic activities as well as movement restrictions. With limitation of movements to only essential activities and emergencies, disruptions of routine health services including routine immunisation (RI) visits for children were inevitable. On the 5th of May, 2020, the government announced a phased and gradual easing of the lockdown. [9]

The direct effects of the pandemic are devastating with significant morbidities and mortalities across the globe. Of equal importance are the indirect consequences of the pandemic such as disruptions of routine childhood immunisation. Prolonged lockdowns in many countries have affected routine immunisation schedules; hence, children are at risk of vaccine-preventable diseases (VPDs) and their complications. Globally, in 2020, 23 million children missed out on routine immunisation as health priorities diverted to control the pandemic - the highest number since 2009.[10] In the WHO African region, there were significant disruption to routine immunisation sessions; some countries partially suspended fixed-post and outreaches services while many others reported challenges with vaccine supply, vaccine demand because of fear of COVID-19 exposure, transportation barriers, and misinformation.[11] In south-west Nigeria, Babatunde and colleagues observed a decline in immunisation coverage rates during the pandemic periods across the various vaccinations antigens.[12] This brings to fore the need for developing strategies that can be employed to reduce the impact of pandemics on RI, more so, since immunisation is one of the most impactful and cost-effective public health interventions and averts over 4 million deaths annually.[13]

The WHO Global Vaccine Action Plan emphasizes the need for countries to ensure at all points a national immunisation coverage of 90% and 80% vaccination coverage in all districts in the country,[14] but Nigeria has been struggling to meet this target, even before the onset of the pandemic. Nigeria has the highest number of unimmunized children worldwide and is among the top 10 countries where most of the incompletely immunised children in the world live.[15] According to the 2018 Nigeria Demographic and Health Survey, only 31% of children aged 12-23 months had received all the basic vaccinations with vaccination coverages of <10% in some states; a little less than 20% of children had received no vaccinations.[16] However, Nigeria had just recently gained a WHO status of being wild poliovirus-free and efforts are still ongoing at the national, state and local levels, including collaboration with international partners to maintain

this status and eliminate measles, as well as other vaccine-preventable diseases. Therefore, any disruption in these immunisation schedules can erase all the gains made by this international coalition and set Nigeria back by decades. There is need to maintain and improve on the progress made so far in eliminating VPDs and thus, improve child health and survival.

Against this backdrop, this study was carried out to assess the effect of the COVID-19 and the systems-wide impact of the lockdown on childhood vaccination in Nigeria, and to identify and suggest context-specific solutions and strategies that will help maintain RI services during disease outbreaks and pandemics.

Methods

Study Area

Abuja is the Federal Capital Territory of Nigeria and shares boundaries with Niger, Nasarawa, Kogi and Kaduna states.[17] The FCT has a landmass of approximately 7,315 km^2, and it is situated within the Savannah region with moderate climatic conditions, and an estimated population of about 3.2million.[17] It occupies about 250 sq.km. as a cosmopolitan city with people of different ethnic backgrounds and social classes.

Study Setting

The FCT has both public and private health care facilities. In the public sector, there are three tertiary hospitals, 14 secondary healthcare facilities and 248 primary healthcare centres in the six local government areas. The secondary healthcare hospitals offer intermediate level of healthcare and are overseen by the FCT administration via the Health Management Board.[18] Services offered at these facilities include immunization services, family planning, maternal & child health, Bamako Initiative/Essential Drug Programme, schools' health services, Baby Friendly Hospital Initiative Programme (BFHIP) and nutrition services.[18]

Routine immunisation services are usually provided at least once every weekday at the secondary healthcare facilities and are mostly rendered at fixed centres. Information on routine immunisation flows from both the public and private health facilities to the LGA immunisation officer who collates the data and forwards same to the LGA monitoring and evaluation officer. Aggregated data are uploaded into the DHIS2 from where it will be accessed by the Federal Ministry of Health.[18]

The current Immunization schedule in Nigeria [19]

- At birth- BCG, OPV 0, HBV
- 6 weeks- OPV 1, PCV 1, Rotavirus 1, Pentavalent 1
- 10 weeks- OPV 2, PCV 2, Rotavirus 2, Pentavalent 2
- 14 weeks- OPV 3, PCV 3, IPV, Pentavalent 3
- 6 months- Vitamin A
- 9 months- Measles, Yellow fever, Meningitis vaccine
- 1 year- Vitamin A. Vitamin A is given every 6 months till the age of 5 years
- 15 months- Measles 2

Chicken pox vaccine and MMR (Measles Mumps Rubella) though available in the country are not currently on the National immunization schedule. Men ACYW135: Quadrivalent meningococcal conjugate vaccine, and cholera are given during outbreaks and in special locations.

COVID-19 Lockdown in Nigeria

Given the rising cases of COVID-19, the Government of Nigeria (GoN) announced a lockdown starting at midnight on March 30, 2020, and ended on June 29th, 2020.[9] It was a total ban on movement, social and economic activities in three major cities (Lagos, Ogun, and Abuja) that were worst hit by the novel coronavirus.[9] Thereafter, other cities with rising cases of the virus were equally locked down. Providers of essential services were exempted and these include health, law enforcement, utility and telecommunications.[9] For the public, urgent medical care and limited access to food items were allowed. Health system was affected, most especially at the primary health care level where immunisation activities were grossly disrupted. Due to the lockdown, outreach activities were suspended, vaccine supply chains both at national and state levels were interrupted. The public patronage for the routine immunisation was at the lowest ebb. Monitoring and supervision of immunisation sessions both at the fixed posts and outreach centres were upended due to the fear of COVID-19 by the health workers.

Ethical Issues/Statement

Ethical approval was obtained from FCT ethical board. Data collected were stored and analysed maintaining confidentiality of subjects. Informed consent was obtained from parents and/or

caregivers of children under 24 months (respondents) before they were enrolled into the study. Participants could withdraw from the study willingly and this did not affect provision of quality health service to them.

Study Design/Protocol

This study was a comparative cross-sectional study, carried out from January to June 2020, where January to March represented the pre-lockdown period and April to June, the lockdown period. Primary data were collected, using a semi-structured questionnaire from parents and/or caregivers of children under 24 months attending well-child clinics of four randomly selected secondary health facilities, who were eligible for routine immunisation during the pre-lockdown and lockdown periods as categorised by the study. The questionnaires were proportionately administered by the researchers at the different health facilities to respondents who were recruited consecutively. The questionnaires collected anonymous demographic data and immunisation history of respondents, assessed their concerns regarding health facility visits during the pandemic, and their recommendations regarding how routine immunisation can be safely continued during a pandemic.

On the other hand, the secondary data were extracted directly from the immunisation records from four randomly chosen secondary health facilities within the FCT. The pre-lockdown and lockdown data were compared to assess the impact of COVID-19 lockdown on routine childhood immunisation.

Data Analysis

Data was extracted, entered, summarized, cleaned, and cross-checked throughout the study process to ensure confidentiality and accuracy. For summary measures, percentage, and for continuous variables, mean and standard deviation (SD) were used. Descriptive statistics including line graphs were plotted to compare the trends of the coverage rates before and after the index case of COVID-19 pandemic. Student *t*-test was done to test the mean changes in immunisation coverage among the groups. A p-value <0.05 was considered statistically significant.

Results

Immunisation uptake before and during the COVID-19 lockdown periods from the hospital records.

The data below (Table I and Figure 1) from the immunisation records of the four hospitals showed a significant decline of 19.1% in the total number of immunisations given before - and during the lockdown period [t=2.86, p=0.035]. The highest decline was seen for the 6 weeks' vaccines (Pentavalent-1, Pneumococcal conjugate vaccine (PCV) -1, Oral Polio Vaccine (OPV) -1, Rota-1), followed by the 10 weeks (Pentavalent-2, PCV-2, OPV-2, Rota-2) and 14 weeks (Pentavalent-3, PCV-3, OPV-3, Injectable Poliovirus (IPV) vaccines. The least decline was observed in the 9 months' vaccines (Measles, Yellow Fever, Meningitis).

Table I: Immunisation uptake in the pre and during lockdown

Vaccination	Before lockdown	Lockdown	% Decline in uptake	Test statistic	p-value
At Birth	2732	2333	14.6		
6 weeks	2540	1748	31.2		
10 weeks	2195	1565	28.7	2.86	0.035
14 weeks	2231	1686	24.4		
9 months	2058	1770	14.0		
Total	11256	9102	19.1		

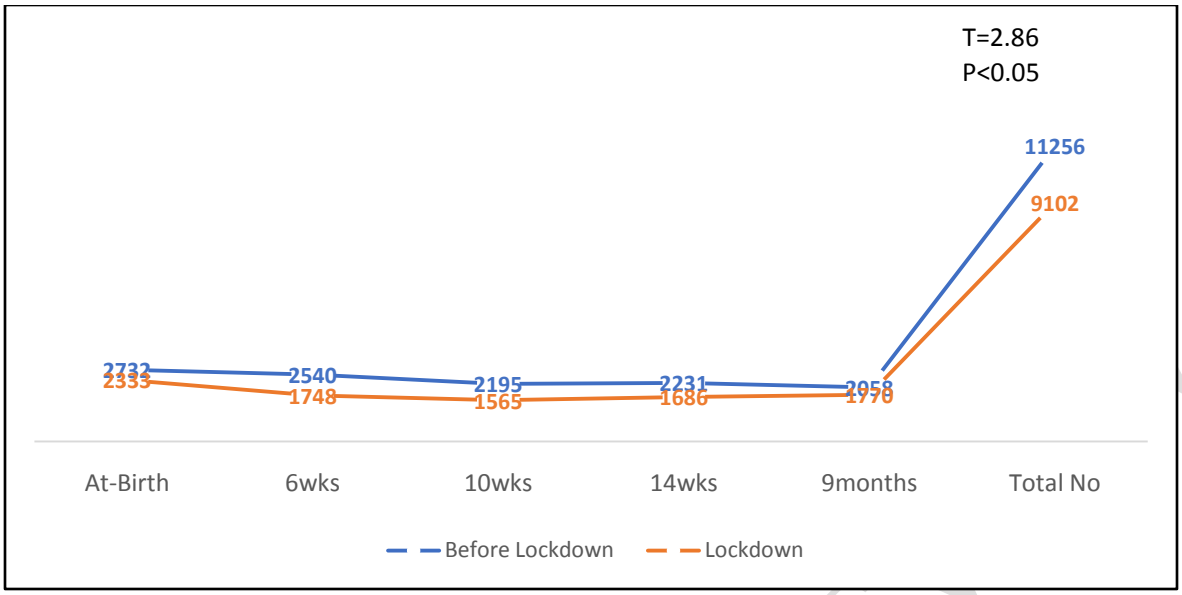

Figure1: Graphical representation of the immunisation uptake pre- and during lockdown.

General Characteristics of the study respondents

Among the study population, subcategories with the highest proportions were females, age 31-40 years, married, tertiary education, private employees, and mothers (93.3%, 57.5%, 94.7%, 55.1%, 43.2% and 90% respectively). (Table II)

Table II: General Characteristics of the study respondents

Variables	**Frequency (%)**
Gender	
Female	140 (93.3)
Male	10 (6.7)
Total	150 (100.0)
Age Category	
≤30 years	54 (37.0)

31-40 years	84 (57.5)
41-50 years	7 (4.8)
>50 years	1 (0.7)
Total	146 (100.0)
Marital Status	
Single	7 (4.7)
Married	142 (94.7)
Divorced	1 (0.7)
Total	150 (100.0)
Highest Level of Education	
Primary	2 (1.4)
Secondary	22 (15.0)
Tertiary	81 (55.1)
Postgraduate	42 (28.6)
Total	147 (100.0)
Occupation	
Health Professionals	15 (10.1)
Government Employee	34 (23.0)
Private Employee	64 (43.2)
Trader	22 (14.9)
Artisan	2 (1.4)
Unemployed	11 (7.4)
Total	148 (100)

Relationship with Child(ren)	
Father	9 (6.0)
Mother	135 (90.0)
Guardian	6 (4.0)
Total	150 (100.0)

Parents' response to questions concerning immunisation

Eighteen (12%) respondents missed at least one immunisation visit during the lockdown; the 6 weeks' vaccines and the 9 months' vaccines were the most missed (n=6, 30.0% for both). None of the children missed the immunisation at birth. One hundred and ninety-five (54.2%) responded that it is important to continue immunisation during pandemics because it protects their children from illnesses. (Table III)

Table III: Immunisation history

Variables	**Frequency (%)**
No of missed immunisation visits	
None	132 (88.0)
One	15 (10.0)
Two	3 (2.0)
Total	150 (100.0)
Missed vaccines	
At birth	0 (0.0)
6weeks	6 (30.0)
10weeks	2 (10.0)
14weeks	4 (20.0)

9months	6 (30.0)
18months	2 (10.0)
Total	20 (100.0)
Respondents' opinion on continuation of immunisation during pandemic?	
Yes	145 (96.7)
No	5 (3.3)
Total	150 (100.0)
Reasons to continue immunisation during the pandemic	
Protect my child from illnesses	195 (54.2)
Protect other children from illnesses	58 (16.1)
Duty of care	66 (18.3)
Immunisation record update	41 (11.4)
Total	360 (100.0)
Awareness of continuation of immunisation services during the pandemic	
Yes	129 (86.0)
No	21 (14.0)
Total	150 (100.0)

Concerns regarding health facility visit for immunisation during the pandemic

Details on health facility visit of the respondents for vaccination during the pandemic are represented in Table IV. Sixty-five (65.3%) of the respondents visited a health facility for

vaccination of their children while 52 (34.7%) did not. For those eligible for vaccination, fear of contracting COVID was the commonest reason for not presenting (26.4%) followed by lack of transportation money (5.7%). For those that came to came to the health facilities during the lockdown, the main reason (in 55.6% of cases) for not getting vaccinated was that the vaccination centres were not open.

Table IV: Concerns regarding health facility visit for immunisation during the pandemic

Variables	Frequency (%)
Heath facility visit for immunisation during lockdown	
Yes	98 (65.3)
No	52 (34.7)
Total	150 (100.0)
Reasons for not visiting the health facility for immunisation during lockdown	
Child(ren) not due for immunization	32 (60.4)
Fear of contracting COVID-19	14 (26.4)
Law enforcement harassment	2 (3.8)
Possibility of receiving COVID-19 trial vaccine	2 (3.8)
Lack of money for transport	3 (5.7)
Travelled to my hometown	0 (0.0)
Total	53 (100)
Got immunised at the health facility during lockdown	
Yes	100 (73.3)
No	10 (6.7)
Total	110 (100.0)
Reasons for not getting immunization during lockdown	

Facilities were not open	5 (55.6)
Vaccines were not available	2 (22.2)
Facilities were overcrowded	2 (22.2)
Workers had poor attitude	0 (0.0)
Total	9 (100.0)
Did you reach out to health facility during lockdown?	
Yes	58 (38.7)
No	92 (61.3)
Total	150 (100.0)
Did the healthcare provider assure safety?	
Yes	56 (37.3)
No	2 (1.4)
Not applicable	92 (61.3)
Total	150 (100.0)

Participants' concerns and recommendations regarding routine immunization during pandemic

Participants concerns and recommendations regarding routine immunisation during pandemic (Figures 2, 3 & 4)

The highest number of the participants (46%) had concerns about getting COVID if they visited the health care facility for the purpose of routine immunisation while the least proportion were concerned about not having money to pay for vaccines when they get to the facility. Similarly, 46.9% of the participants responded that they would prefer that their homes are visited by the healthcare workers to deliver routine vaccination during a pandemic, followed by 34.5% who responded that they would prefer to just drive-by the hospital and receive the vaccines while inside the car without having to gather at the regular vaccination centres. Regarding participants'

responses about safety measures that will make them comfortable to visit the hospital for routine immunisation during pandemics, the highest proportion (25.4%) responded that they will feel comfortable if there is reduced number of patients in the waiting area, while the least proportion (4.3%) responded that they would prefer that visits are strictly for vaccines without checking the child's weight or temperature to reduce contact with child.

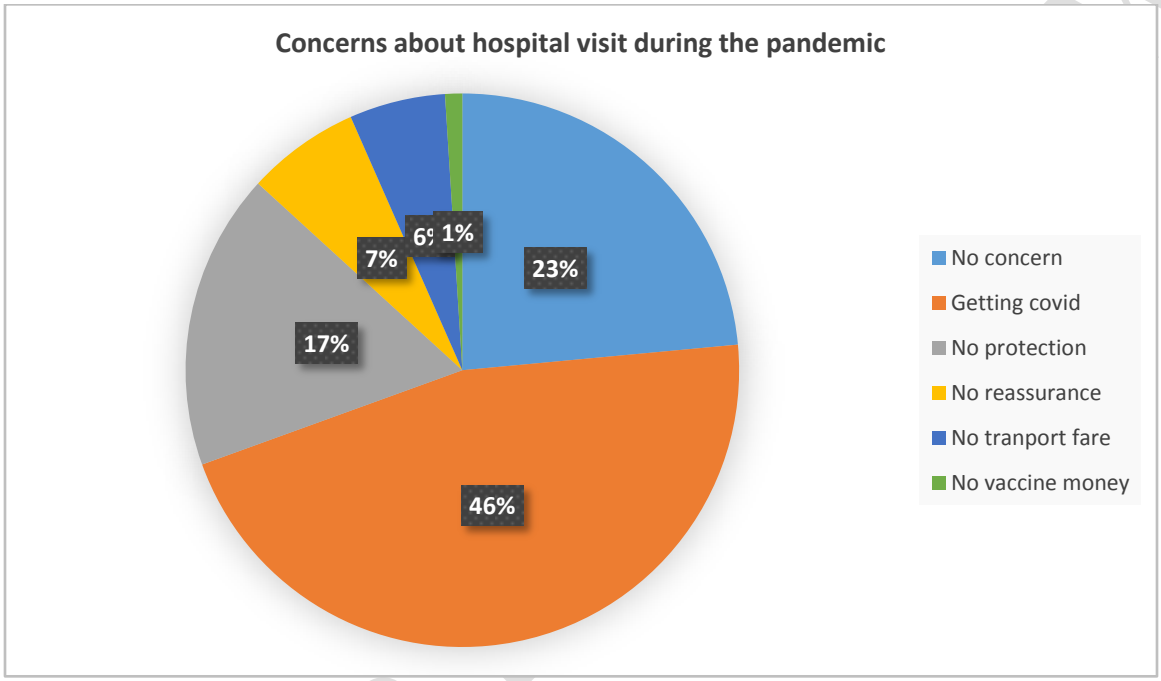

Figure 2: Participants' concerns about hospital visit during the pandemics

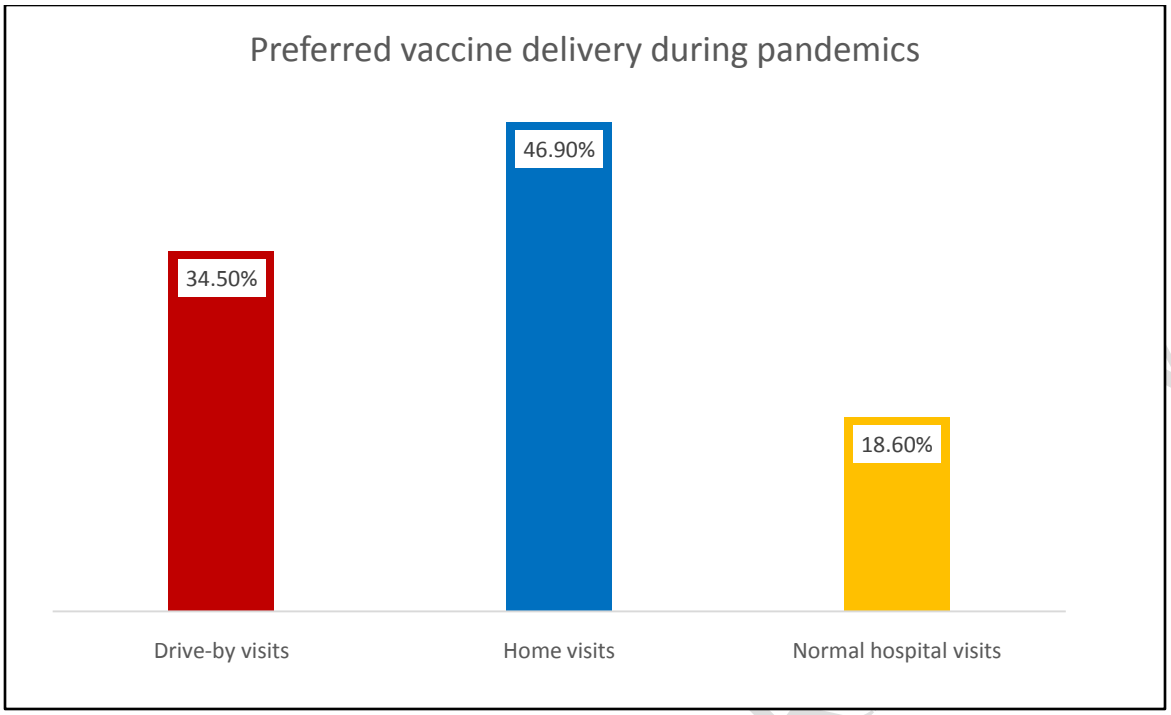

Figure 3: Participants preferred vaccine delivery during pandemics

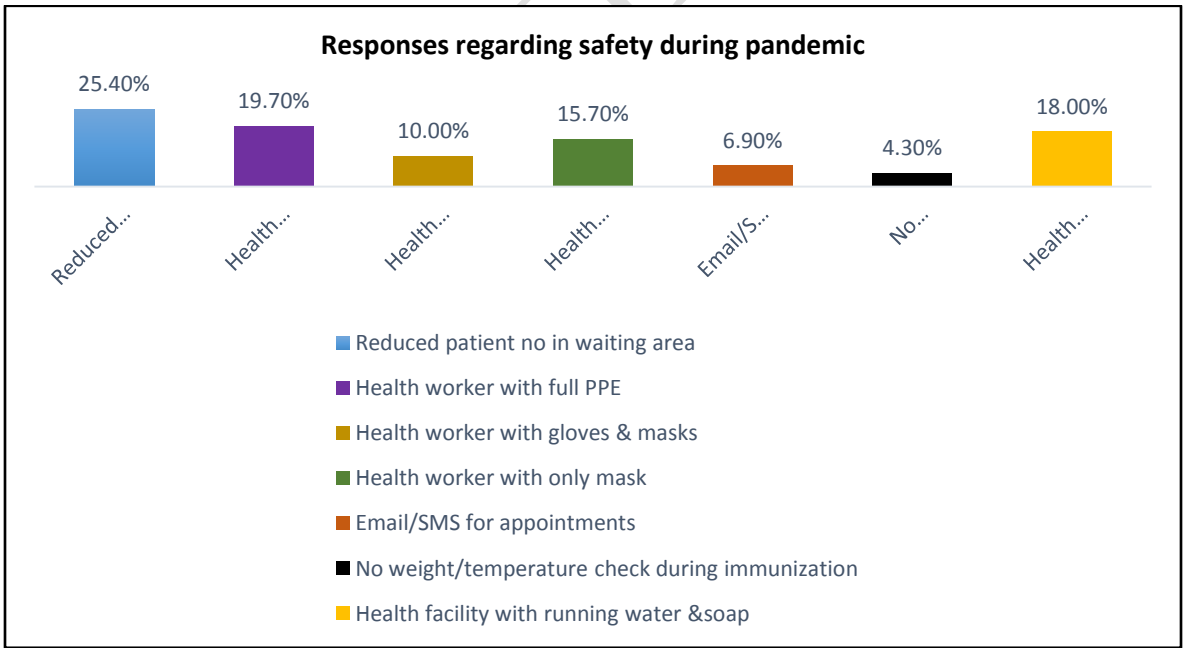

Figure 4: Participants responses regarding safety during pandemic

Discussion

The COVID-19 pandemic has adversely affected global health systems with profound consequences on essential health services including routine childhood immunisations. This study reflects the impact of COVID-19 pandemic on routine immunisation in the Federal Capital Territory of Nigeria during the initial months of the pandemic. There was a significant decline in the total number of vaccines administered and the number of vaccination visits during the lockdown period compared to the baseline pre-lockdown period. WHO and UNICEF reported notable disruptions of routine immunisation programs globally due to COVID-19 and drops in childhood vaccination rates in majority of countries; 23 million children missed basic routine vaccines in 2020.[10] Similar trends were also documented in reports from different regions and individual countries where disruptions in routine immunisation services with reduction in the uptake of all the vaccines were noted.[20-23]

Most of the parents and caregivers in this study were educated, with majority having tertiary levels of education and most of them understood the need and benefits of childhood immunisation. The observed reduction in vaccination rates can be largely explained by the lockdown and physical distancing measures that were enforced by the government during the early phase of the pandemic in the major cities of Nigeria as non-pharmaceutical infection prevention and control strategies to curtail the spread of the virus. With the lockdown, there were stay-at-home orders, restrictions of movement and unavailability of public transport facilities for patients as well as healthcare workers. Some health facilities were completely shut down while others attended only to emergencies and out-patient services including immunisations were suspended during the period. All these resulted in reduced access to routine immunisation services. Even when these services were available, some Nigerians were not able to access vaccines due to economic hardship, which some healthcare personnel also faced.

Asides the lockdown, other factors such as vaccine stock out may have also contributed as there was a global constraint on vaccine production, transportation, and distribution due to border closures, flight cancellations and restrictions on local movement which worsened the local challenges with vaccine supplies.[24,25] In addition, the WHO recommended temporary suspension of mass vaccination campaigns in countries at the early phase of the pandemic to curtail the risk of community transmission of COVID-19.[20,26,27] Some parents also avoided routine vaccination visits due to the fear of their children contracting COVID-19 at the vaccination centres.

Furthermore, healthcare workers had fears of contracting the virus as access to PPEs was erratic at the early stage of the pandemic.[20]

The observed decline in vaccine uptake might leave these vulnerable children and their communities at risk of vaccine-preventable diseases (VPDs) like measles, tuberculosis, polio, yellow fever and pertussis and their complications in the FCT and other parts of the country. Concerns about the resurgence of these infectious diseases were raised and were valid in view of the COVID interference and the pre-existing suboptimal vaccine coverage, especially in low- and middle-income countries.[20] With the disruption of immunisation services and programs, new and wider circulating mutant polio outbreaks were noted in some parts of Nigeria, including the FCT, and in other countries across the globe.[28,29] Other countries especially in the African continent also recorded outbreaks of VPDs during the pandemic.[30,31] UNICEF recently reported a 79% increase in the number of measles cases globally in the first two months of 2022 which is largely attributed to the COVID-19 pandemic-related disruptions in immunisation service amongst other factors.[32] Outbreaks of these VPDs will increase the morbidity and mortality amongst children and further pose a strain on the already burdened health-care system while trying to combat the pandemic. This also poses a serious threat to Nigeria's recently gained status of being wild poliovirus - free and negatively impacts on the efforts of the country towards elimination of measles and other VPDs. Furthermore, Nigeria's ability to achieve SDG 3.2 - indicator 19, which measures the percent of children receiving full immunisation as recommended by the national vaccination schedule, would be lagging.[33] Hence, there is an urgent need to ensure catch-up vaccination and optimal vaccine coverage in the FCT and Nigeria as a whole.

This noted reduction in the uptake of all the routine vaccines during the early phase of the pandemic observed in the FCT is consistent with findings from other studies on the impact of COVID-19 on immunisation coverage.[34,35] The vaccines co-administered at 6 weeks of age were affected most, followed by the ones given at 10 and 14 weeks of age from the immunisation records and caregivers' report. Similarly, Agrawal and colleagues observed that the first and second DPT vaccines were the worst affected by the disruptions in routine immunisation in India.[34]

Consistent with other reports,[22,36] the parents reported that none of their children missed the birth vaccines while the immunisation records showed that the birth and 9 months vaccines were least

affected. This may be explained by the fact that the birth vaccines (BCG, OPV-0 and HBV-0) are usually given shortly after birth, usually before the baby is discharged from the hospital facility which makes them easier to access than after discharge. Cristi A. Bramer and colleagues noted no decline in the birth-dose hepatitis B coverage among children in Michigan, U.S.A. during the pandemic while in Saudi Arabia, Alrabiaah and colleagues also reported less decline in the birth vaccine coverage compared to the other vaccines during the pandemic.

Amongst the factors contributing to poor vaccine uptake, demand-related factors were prominent. Parental hesitation was the most common reason for not visiting the vaccination sites followed by transportation challenges. Most parents declined or delayed vaccination visits because they had fears about their children or them getting infected with COVID-19 in health facilities as was also documented in other parts of the world.[29,37] Fear of contracting the SARS-CoV-2 as well as inadequate awareness and educational strategies for the public contributed to the missed vaccinations. Vaccination campaigns were also suspended at the early phase of the pandemic. Caregivers need to be constantly enlightened and reassured about the effectiveness of infection prevention measures in the vaccination centres and the surpassing benefits of getting their children immunised. Abbas and colleagues, in a benefit-risk analysis, compared the health benefits of sustaining routine childhood immunisation during the COVID-19 pandemic in Africa with the risk of acquiring COVID-19 infection through visiting routine vaccination service units.[38] Their findings were similar across countries, demonstrating that the benefits far outweigh the excess risk of SARS-CoV-2 infection during the child vaccination visit, especially for the vaccinated child and they recommended continuation of routine childhood immunisation during diseases outbreaks and pandemics.

Some of the parents who participated in this study also experienced supply-related limiting factors such as closed vaccination sites and unavailability of vaccines. These factors can also be largely attributed to the indirect effects of the pandemic and were experienced in other countries. In relation to the vaccination areas, a significant number of parents and caregivers in this study left without their children getting vaccinated because of the over-crowded nature of these vaccination sites. This, in addition to the general fear of getting infected probably compounded the situation and the children ended up not being immunised. On the other hand, fear of being given the COVID-19 trial vaccine and harassment by law-enforcement officers were highlighted as reasons related to missed vaccination in this study.

Concerning the preferred vaccine delivery option for parents and caregivers during a pandemic, most parents opted for home visits and drive-by visits. The vaccination team could go to the communities in immunisation vans and administer the vaccines to children at their homes. Alternatively, parents that are mobile could drive to the vaccination sites and get their vaccinated while in their cars in the parking lots. These innovative alternatives could be explored in Nigeria during a pandemic to reduce overcrowding at vaccination areas, allay caregivers' fears and optimize vaccine uptake while still maintaining immunisation services at the fixed sites. The primary health care structure and facilities can be employed for easy reach of the target populace, especially in rural settings and hard-to reach areas. The place of public enlightenment during pandemics cannot be overemphasised; only few of the respondents knew the exact types of PPE required for vaccinators and healthcare workers offering immunisation services.

Conclusions

The COVID-19 pandemic has considerably affected the Nigerian healthcare system as most health systems in the Global South, beyond the direct effects of the virus, causing diversion of public health priorities and disruption of routine health services with childhood vaccination programs being greatly affected. Immunisation rates in the FCT dropped significantly putting children and their communities at risk of outbreaks of vaccine-preventable diseases with further strain on the health system. Therefore, as efforts to mitigate the spread of SARS-CoV-2 are ongoing, deliberate plans should bet in place to maintain RI services and ensure rapid catch-up vaccination programs to close the gaps created during the pandemic and prevent secondary outbreaks of VPDs. This demands a close alliance between the government, healthcare providers, opinion leaders, the media, and relevant stakeholders to enlighten the public on the need to keep up with RI even during disease outbreaks or pandemics

Key Messages:

1. Implications for Policymakers

- Measures should be in place to close the immunisation gaps created during the early phase of the SARS CoV-2 pandemic by active surveillance of missed cases, scheduling catch-up vaccinations for eligible children who missed their vaccines, strengthening of routine immunisation across the FCT and supplementary immunisation activities. Electronic

immunization recording is needful as it will enable tracking and follow up of children who missed their scheduled vaccines.

- Routine Immunization services should be continued and reinforced during pandemics as well as mass immunization campaigns and enlightenment programs for the populace during and after pandemics. Vaccine hesitancy should also be addressed and measures to improve uptake including the COVID-19 vaccine explored. The public health authorities and health care workers need to constantly educate the public and caregivers on the importance, benefits, and safety of RIs to help alleviate their fears or concerns and address vaccine hesitancy. The use of social media, traditional media, community, and religious leaders will play a pivotal role in disseminating information to the public on the value of routine vaccines.
- Infection Prevention Control (IPC) measures such as physical and social distancing, use of PPEs, hand hygiene should be strictly adhered to by the vaccinators and healthcare workers at facilities.
- Appointment-based visits can be scheduled using phone calls, emails, and text messages to have less people in health facility waiting areas.
- Drive-by and home-based immunisation services can be employed in addition to fixed site vaccination activities to bridge the immunisation gap experienced during pandemics.
- Surveillance for VPDs during pandemics is very paramount and should be regularly executed at such times for prompt interventions.

2. Implications for Public

-This study showed a significant decline of 19.1% in the total number of childhood immunizations given in the pre- and during the lockdown period. This downturn implies that

many eligible children missed their vaccines and are thus, at risk of vaccine-preventable infections which could be deadly.

-The commonest reason parent reported for not bringing their children for vaccination was the fear of contracting COVID. Infection prevention and control practices in hospitals make the risk of contracting COVID minimal. These include standard precautions as well as additional precautions in view of the pandemic. On the other hand, the risks of missing out on these life-saving vaccines far outweigh whatever risks visiting the health facilities may pose.

-Home services and drive-by immunization have been suggested by respondents as immunization options and will be advocated for to improve access to vaccines during such periods.

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