Original Research Article

# Covid 19 and routine vaccination programme: does it affected badly?


ABSTRACT

Background: The impact of COVID-19 on general health care delivery systems are huge including immunization services, the several measures were taken by most of the government all over the world to prevent the spread of infection such as lockdown, wearing a mask and social distancing, etc. The people have suffered a lot during the pandemic, not only due to the burden of disease but have also faced difficulties in other domains of life. One of the important concerns is the interruption of routine immunization services. The consequences of interrupted immunization services may be life-threatening, as chances of outbreaks of vaccine-preventable diseases (VPD) in susceptible children could be high**.**

Aim: to find out delay in routine immunization services during covid-19 and also to determine the factors associated with delay in immunization**.**

Material & Method**:** This study was a cross-sectional hospital-based observational study at Career Institute of Medical Sciences Lucknow, India. We collected the vaccination record after lockdown from the well-baby clinic and telephonically from the parents starting from 1st June 2021 till 31st December 2021. We checked the records of vaccination of infants to find out delays in the vaccination, as per the national immunization schedule. The records of a total of 265 infants were enrolled. Out of all, 33 did not fit the inclusion criteria and therefore were excluded from this study.

Results: finding our study pointed that there significant delay was found in routine immunization among infants. The factors responsible for delay in different vaccination observed in this study were, Phobia of COVID-19- 20%, lockdown- 22%, interruption of routine health services- 15%, social myths-8%, poor transport facility- 10%, illness of child- 8%, did not notice- 3% and multiple factors amongst- 13%.

Conclusion**:** COVID -19 pandemic has affected the routine immunization services that results in delay of different vaccines at different ages which may leads to outbreak of the vaccines preventable diseases.so its need of hour to intervene at earliest to prevent such out breaks among children.



KEYWORDS

Covid-19, Vaccination Delay, Routine-Immunization




Introduction:

The COVID-19's first case in India was reported on 30 January 2020. As a preventive measure government of India observed 14 hours voluntary Janta curfew on 22 March. The compulsory lockdown came into force from 24th March to 31st May 2021. During this pandemic, people faced severe interruption of routine public services including general health services. So, in the era of the COVID-19 Pandemic, the world is facing complex situations in all domains including disruption of

routine immunization services. The consequences of interrupted immunization services may be disastrous as chances of outbreaks of vaccine-preventable diseases (VPD) in susceptible children could be high. In Chicago in 1993-4, a significant outbreak was reported in which 52 % occurred in young infants who had yet completed the normal vaccination schedule, but 20% of cases resulted in failure to provide vaccination on time**.** [1] Immunization activities should be prioritized and protected for continuity to the greatest extent possible during times of severe disruption to service delivery.[2] In India, the Expanded Program on Immunization (EPI) was launched in 1978 mainly in the urban areas for immunizing children 1-year age-group. In 1985, the program was renamed the Universal Immunization Program (UIP) focusing mainly on infants and pregnant mothers. The measles vaccine was included in the program in 1990 and the program had been expanded to spread across the country. The Ministry of Health and Family Welfare, Government of India, launched Mission Indradhanush in December 2014 to achieve more than 90% full immunization coverage in the country by the year 2020 with a vision that it will eventually close immunity gaps and strengthen immunization coverage. In the present study, we studied the delay in different vaccinations and the factors responsible for delay in vaccinations in the COVID-19 pandemic. Although there is no standard definition of delayed vaccinations, we took 1 month (31 days) delay from the scheduled date as the Delay in vaccinations, which was similar to as defined by Lumen et al. [3]

Methods:

This study was a cross-sectional hospital-based observational study at Career Institute of Medical Sciences Lucknow, India. We collected the vaccination record after lockdown from the well-baby clinic and telephonically from the parents starting from 1st June 2021 till 31st December 2021. We checked the records of vaccination of infants to find out delays in the vaccination, as per the national immunization schedule. The records of a total of 265 infants were enrolled. Out of all, 33 did not fit the inclusion criteria and therefore were excluded from this study. Out of 232, 88 were new and the rest were old or follow-up infants. The prior informed consent was taken from the parents, and a self-designed questionnaire was asked. The study was approved by the ethical committee of the college.

**Inclusion criteria-**

1-All the infants who were enrolled in our pediatrics OPD for vaccination who had been advised for consequent vaccination before lockdown and who missed the vaccination for more than 4 weeks. (n=144).

2-The new infants who were not initially enrolled in our vaccination OPD came for the first time and their vaccination got delays for more than 4 weeks. (n=88).

**Exclusion criteria**:

1-All infants, new or old follow-up were excluded from the study who were administered vaccination on time either from our center or from outside.

**2**-The infants who were also excluded from this study who did not produce the vaccination documentation

National immunization schedule up to infancy

BCG- at birth (till 1 yr of age if not given at birth), 0.1 ml, intradermal at upper left arm
Hepatitis –B birth dose (within 24 hours), 0.5ml, intramuscular, anterolateral side of mid-thigh (left)
OPV-O- at birth (within first 15 days), 2 drops, oral,

Pentavalent-at 6 weeks, 10 weeks, 14 weeks (till 5 yrs of age), 0.5ml, intramuscular, anterolateral side mid-thigh (left).
Fractional IPV-at 6 weeks & 14 weeks (1 year of age) 0.1ml, intradermal, upper arm (right)
Rotavirus-at 6weeks,10,&14 weeks(1year of age),5 drops, oral
Pneumococcal conjugate –at 6 weeks & 14 weeks .at 9 completed months –booster(1 rear of age),0.5ml intramuscular, anterolateral side mid- thigh(right).
MR(measles, rubella)- at 9 completed months -12 months(5 yrs of age), 0.5ml , subcutaneous, upper arm(right)
Japanese Encephalitis -at 9months-12months (15 yrs of age), 0.5ml, and subcutaneous, upper arm (left)



Results:

Table -1

Demographic profile (N=232)

| Profile | n | % |
|---|---|---|
| Age in days (MEAN±SD) | 126 ±69 | |
| male | 143 | 67 |
| female | 89 | 33 |
| Rural | 120 | 52 |
| urban | 112 | 48 |
| Low socioeconomic | 160 | 69 |
| Average socioeconomic | 40 | 17 |
| Higher socioeconomic | 32 | 14 |
| Feeding pattern under six months (n=208) | | |
| Exclusive breast feeding | 76 | 36.5 |
| Top feeding (Formula milk) | 101 | 48.5 |
| Top feeding(animal milk) | 31 | 15 |
| Bottle feeding | 109 | 47 |
| Unhygienic feeding(top) | 77 | 37 |
| Diluted milk | 17 | 8 |
| Use of sugar | 7 | 3 |
| Feeding pattern above 6months(n=24) | | |
| Adequate complementary feeding | 9 | 37.5 |
| Inadequate complementary feeding | 11 | 46 |
| Delayed Complementary feeding | 4 | 17 |
| Weight(kg)±SD | 5.4±1.2 | |
| Length(cm)±SD | 57±5.4 | |



Table-2

The delays (vaccination gap) in different vaccines in Pandemic Time (n=232)

| Vaccines | Inborn /Old follow-up (n=144) | delays | Outborn/New (n=88) | delays | n | Delays (days)±SD |
|---|---|---|---|---|---|---|
| BCG,OPV O(all out born) | 0 | - | 26 | 9.6±6 | 26(11%) | 9.6±6 |
| Penta 1$^{ST}$+OPV+PCV1ST+FIPV 1$^{st}$+Rota1st | 43 | 38.5±4.6 | 19 | 42±6.6 | 62(27%) | 39.5±5.5 |
| Penta 2$^{ND}$+OPV2nd+Rota 1 st | 44 | 44±8.3 | 17 | 44±9 | 61(26%) | 39±5.3 |
| Penta 3$^{RD}$+OPV+FIPV+Rota 3rd | 39 | 42±5.6 | 20 | 39± 4.9 | 59(25%) | 41±5.5 |
| MR+PCV3rd+JE-I | 18 | 49±9.1 | 06 | 42±10.49 | 24(10%) | 48±9.7 |
| Total | 144 | 42±7.6 | 88 | 32±16.11 | 232 | 38.5±12.68 |

Table -3

Factor responsible for the delay in routine vaccination (N=232)

| Factors | Numbers of respondents | Percentage |
|---|---|---|
| Phobia of Covid 19 | 47 | 20% |
| lockdown | 52 | 22% |
| Interruption of routine health services | 34 | 15% |
| Social myths(e.g vaccination harmful in pandemic) | 18 | 8% |
| Poor transport facility | 23 | 10% |
| Illness of child | 19 | 8% |
| Did not notice | 8 | 3% |
| Multiple factors | 31 | 13% |

A total of 232 children were included in the study, out of which 67% were male and 33% were female. The children belonged to the rural area were 52% and 48 % were from urban area. The children who belonged to low, average, and high socioeconomic were 69%, 17%, and 14% respectively. Out of all 208 children were under 6 months and 24 were above six months of age.144 children were inborn or old follow-up and the rest 88 children were an outborn or new case. The average weight was 5.4±1.2 kg and the average length was 57±5.4 cm. The average delays in vaccination for BCG, OPV -0 & first dose hepatitis –B was 9.6±6 days'. The delay in the first, second, and third dose of pentavalent observed were 39.5±5.5, 39±5.3 & 41±5.5 days respectively. The average delays reported for MR, PCV –III & JE-I was 48±9.7 days. The average delays for all vaccines under one year of age were 38±12.68. The factors responsible for delay in different vaccination observed in this study were, Phobia of COVID-19- 20%, lockdown- 22%, interruption of routine health services-15%, social myths-8%, poor transport facility- 10%, illness of child- 8%, did not notice- 3% and multiple factors amongst- 13%.

Discussion:

In the era of COVID-19, the challenges faced by health care systems are many. One of the complex situation is the interruption of routine immunization services, which may pose children at risk of an outbreak of vaccines preventable diseases. The WHO and UNICEF had warned of a decline in vaccinations during COVID-19. [4] WHO has released a set of guiding principles on 26th March 2020 for immunization activities during the pandemic. The recommendations include temporary suspension of mass vaccination campaigns and considering routine immunization services and VPD surveillance after careful risk-benefit analysis by the authorities in the respective regions.[5] WHO's strategic advisory group of experts on Immunization, on March 30th also recommended the continuation of routine immunization services wherever possible, despite the cessation of vaccination campaigns.[6] The study conducted in Auckland, New Zealand, observed that the odds ratio for developing pertussis in an outbreak during 1995–7 was increased 4.5-fold by delay in receiving any of the three doses of DTaP.[7]The finding of our study pointed that severe interruption of vaccination services in COVID-19 era.

Conclusion**:** COVID -19 pandemic has affected the routine immunization services that results in delay of different vaccines at different ages which may leads to outbreak of the vaccines preventable diseases.so its need of hour to intervene at earliest to prevent such out breaks among children.

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