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Original Research Article

Assessment of immunization coverage during COVID-19 pandemic among 12-23 months old children in Sonitpur district under Bihaguri BPHC of Assam

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ABSTRACT

Background: The longest-lasting decline in childhood vaccination rates in a generation is seen during COVID-19 Pandemic in India. The study aims to analyze the overall scenario of Immunization coverage of 12-23 months children in Sonitpur under sub-centers of Besseria State Dispensary under Bihuguri BPHC during COVID-19 pandemic.
Methods: All the children registered with mother and child protection card in villages under Besseria State Dispensary under Bihuguri BPHC, Sonitpur during COVID-19 pandemic were surveyed for a period of two months from May and June 2021. A simple random sampling method of study includes 84 respondents of children in the age group of 12-23 months.
Results: A total of 84 respondents were surveyed. All the cases include children between the ages of 12 and 23 months. 96.25% babies received BCG at birth. 80% received OPV 0 dose. Hepatitis B was given to 76.25%. 100% of the babies received 3 dosages of OPV at 6, 10, and 14 weeks, only 21 (26.25%) received PCV 1st dose, 24 (30%) received PCV 2nd dose, 23 (28.75%) received PCV booster dose. 65% of the children between 12 and 23 months old received all the vaccinations.
Conclusions: The restriction and the quarantine implemented during the COVID-19 pandemic has hampered the immunization status of the children. The non-availability of vaccines has delayed the immunization status. Comprehensive training and supervision of health workers, increasing awareness regarding immunization sessions, and vaccine preventable disease (VPD) are some of the interventions which could help tackle the issue.

Keywords: COVID-19, Immunization, Pandemic, Vaccine

INTRODUCTION

Between 2019 and 2021, the percentage of children who received three doses of the diphtheria, tetanus, and pertussis vaccine (DTP3) dropped by 5 percentage points to 81%, indicating vaccination coverage both within and between countries.[1] For the health of children, this is a red alert. The advent of vaccines is one of the greatest gifts the medical community has given to humanity. Immunization is one of the most powerful, safe and cost-effective measure to prevent and control a number of diseases. The smallpox virus was systematically eradicated worldwide in 1979 after being injected into everyone throughout the course of the 18th and 19th centuries. The Expanded Programme on Immunization (EPI), which was formally introduced by the World Health Organization in May 1974, aims to immunize every child worldwide against vaccine-preventable diseases such as whooping cough, tetanus, polio, tuberculosis, and measles by the year 2000. In January 1978, the EPI was introduced in India, and in 1985, it was renamed the Universal Immunization Programme.[2] The UIP was launched on November 19, 1985 with the objective to attain self-sufficiency in vaccine production and cold chain equipment manufacturing by

1990, and to immunize at least 85% of infants against the six diseases that can be prevented by vaccination.[3] The national health mission (NHM), India's premier health initiative, was created in 2013 by the combination of two previous missions: the national urban health mission, which was founded in 2005, and the national rural health mission. Additionally, the government launched initiatives aimed at expanding coverage. The Ministry of Health and Family Welfare started Mission Indradhanush in 2014 with the goal of achieving 90% complete immunization coverage for all children by 2020 across the nation in multiple phases. The percentage of children who received all three doses of the DTP3 immunization (diphtheria, tetanus, and pertussis) has significantly decreased, according to preliminary statistics spanning the first four months of 2020. Due to the COVID-19 pandemic, at least 30 measles vaccine campaigns have been cancelled or are in danger of doing so, which might lead to more outbreaks in 2020 and beyond.[4] More than three-fourths (76.4%) of children between the ages of 12 and 23 months in NFHS-5 were fully vaccinated, compared to 62% in NFHS-4.[6] Children's immunization rates range from 57.9% in Nagaland to 90.5% in Orissa.[5] 66.4% of 12-23-month-old Assamese children have received all recommended vaccinations, per NFHS-5.[6]

Role of Asha in immunisation

The National Health Mission (NHM) places a trained female community health activist in every hamlet across the nation as one of its main goals. ASHAs, or Accredited Social Health Activists, are chosen and answerable to the village. ASHA is qualified to serve as a liaison between the public health system and the community. She is accountable for raising community knowledge of health issues and the socioeconomic determinants of health and encouraging local health planning in a way that encourages greater use of the current health services. She should be a promoter of good health practices. It was difficult to carry out the immunization campaign and make sure that every potential beneficiary received the benefits of the shots during the COVID Pandemic due to the restrictions implemented by the government notification. Given the current circumstances, it is imperative to ascertain the vaccination coverage, as this will enable the planners to better execute the immunization program and get >90% coverage. Thus, this study was conducted for assessing the immunization coverage during COVID-19 pandemic under 12-23 months children in Sonitpur district under Bihaguri BPHC of Assam.

METHODS

A population-based cross-sectional survey under seven sub centres of Besseria State Dispensary under Bihaguri Block Primary Heath Care, Tezpur were taken equally from each sub centres by using simple random sampling method, where the data were collected following a description of the study's objectives to the participants (preferably mother) and obtaining their consent for their participation, the data was collected through the following techniques: Interview method and verification of medical records The MCP card, or Mother and Child Protection card, covers all children between the ages of 12 and 23 months. The children's confidentiality was maintained by not disclosing their name, registration number, or birth date. A total number of 84 respondents were surveyed randomly for a period of two months 1st May, 2022 to 30th June, 2022 were included. Based on the data available on the mother and children protection (MCP Card) the vaccination received by the children were assessed and compilation of the data were done.

Inclusion criteria

All the children of 12- to 23-months age range in the research area, the mother and child protection card were used for the immunization records.

Exclusion criteria

Respondents who did not give consent to participate in the study. Respondents with incomplete filling or misplacements of MCP card were excluded.

Statistical analysis

Data is represented in the form of tables, bar diagram. Statistical analysis is done in terms of percentage.

RESULTS

This study was carried out in the villages under 7 subcentres under Besseria State Dispensary of Bihaguri Block Primary Health Care, under the guidance of Tezpur Medical College, Community Medicine Department, Tezpur, Assam.

Out of 84 respondents (Parents/Grand Parents/ Guardians) only 80 respondents were considered for the study as 4 respondents gave incomplete information. So, the final 80 respondents were interviewed in our study. The results and observations are as follows.

Out of 80 respondents surveyed, (Table 1) 73 (91.25%) are mothers, 2 (2.50%) are fathers and 5 (6.25%) are other members of the family. The sex of the child 38 (47.50%) are male and 42 (52.50%) are female, majority of people, 28 (35.50%) are from middle class (III) category, followed by upper middle class (II) with 22 (27.50%) people, lower middle class (IV) with 17 (21.25%) people, upper class (I) with 11 (13.75%) people and lower class (V) with 2 (2.50%) people. 46 (57.50%) preferred water filtration, 25 (31.25%) preferred boiling and 9 (11.25%) did not prefer any method of purification of water. 75 (93.75%) are born at term period, 4 (5%) are born pre-term and 1 (1.25%) is born post term period. 77 (96.26%) received colostrum at birth while 3 (3.76%) did not receive colostrum, 12 (15%) received some form of pre-lacteal feeds while 68 (85%) did not receive any form of pre-lacteal feeds, 68 (85%) of

infants were exclusively breastfed while 12 (15%) were not exclusively breastfed.

Table 1: Socio-demographic characteristics of the vaccinated children.

Respondents	Number of patients	Percentage
Mother	73	91.25
Father	2	2.50
Others	5	6.25
Sex of the child		
Male	38	47.50
Female	42	52.50
Socio economic status		
Upper class (I)	11	13.75
Upper middle class (II)	22	27.50
Middle class (III)	28	35.50
Lower middle class (IV)	17	21.25
Lower class (V)	2	2.50
Method of drinking water purification		
Filtration	46	57.50
Boiling	25	31.25
Not filtered	9	11.25
Maturity at birth		
Pre-term	4	5
Term	75	93.75
Post term	1	1.25
Colostrum given		
Yes	77	96.25
No	3	3.75
Pre lacteal feed		
Yes	12	15
No	68	85
Exclusive breastfeeding		
Yes	68	85
No	12	15

At birth, 77 (96.25%) received BCG vaccination and 3 (3.75%) did not, 64 (80%) received OPV 0 dose and 16 (20%) did not and 61 (76.25%) received hepatitis B vaccination and 19 (23.75%) did not receive it. At 6 weeks, 80 (100%) received OPV 1st dose and pentavalent 1st dose, 77 (96.25%) received rotavirus 1st dose and fIPV 1st dose and 21 (26.25%) received PCV 1st dose while 59 (73.75%) did not receive it. At 10 weeks, 80 (100%) received OPV 2nd dose, 78 (97.50%) received rotavirus and pentavalent 2nd dose while 2 (2.50%) did not receive them. At 14 weeks, 80 (100%) received OPV 3rd dose and pentavalent 3rd dose, 75 (93.75%) received rotavirus 3rd dose, 74 (92.50%) received fIPV 2nd dose and 24 (30%) received PCV 2nd dose. At 9-12 months, 80 (100%) received MR 1st dose and JE 1st dose, 23 (28.75%) received PCV booster dose and 77 (96.25%) received vitamin A 1st dose (Table 2).

52 (65%) were fully immunized, 28 (35%) were all immune, with none lacking immunity. 40 (50%) gave a history of AEFI while 40 (50%) gave no history of AEFI. 37 (46.25%) reported that ASHA accompanied the mother for institutional delivery and 43 (53.75%) reported that ASHA did not accompany the mother for institutional delivery. 64 (80%) received complete HBNC via ASHA, 14 (17.50%) received HBNC but incomplete and 2 (2.50%) received no HBNC from ASHA (Table 3).

Table 2: Vaccination status according to the national immunization schedule 12-23 months children.

Vaccination	Vaccinated (%)	Not vaccinated (%)
At birth		
BCG	77 (96.25)	3 (3.75)
OPV 0	64 (80)	16 (20)
Hepatitis B	61 (76.25)	19 (23.75)
At 6 weeks		
OPV 1	80 (100.0)	0 (0.0)
Rotavirus 1	77 (96.25)	3 (3.75)
Pentavalent 1	80 (100.0)	0 (0.0)
fIPV1	77 (96.25)	3 (3.75)
PCV1	21 (26.25)	59 (73.75)
At 10 weeks		
OPV 2	80 (100)	0 (0.0)
Rota virus 2	78 (97.50)	2 (2.50)
Pentavalent 2	78 (97.50)	2 (2.50)
At 14 weeks		
OPV 3	80 (100.0)	0 (0.0)
Rota virus 3	75 (93.75)	5 (6.25)
Pentavalent 3	80 (100)	0 (0.0)
fIPV 2	74 (92.50)	6 (7.50)
PCV 2	24 (30)	56 (70)
At 9-12 months		
MR 1	80 (100.0)	0 (0.0)
JE 1	80 (100.0)	0 (0.0)
PCV booster	23 (28.75)	57 (71.25)
Vitamin A 1st dose	77 (96.25)	3 (3.75)

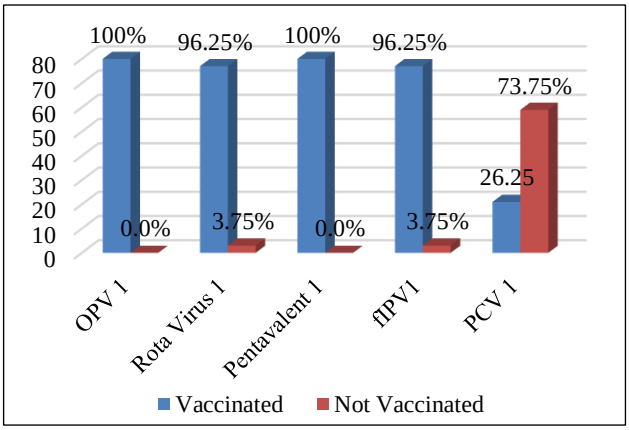

Figure 1: Displaying study subjects selected by if vaccines were received at 6 weeks.

Table 3: Vaccination Status and role of ASHA according to the national immunization schedule 12 - 23 months children.

	Frequency (n=80)	Percentage
Immunization status		
Fully immunised	52	65.0
Partially immunised	28	35.0
Non -immunised	0	0.0
History of AEFI		
Yes	40	50.0
No	40	50.0
All antenatal visit accompanied by ASHA		
Yes	58	72.50
No	22	27.50
ASHA accompanied mother for institutional delivery		
Yes	37	46.25
No	43	53.75
ASHA provided home based newborn care		
Yes, and complete	64	80.0
Yes, but incomplete	14	17.50
No	2	2.50

DISCUSSION

The present study was conducted among 12-23-month children registered under Bihaguri BPHC, Sonitpur district, post covid, to assess the immunization status. Here we attempt to discuss the major findings of the present study. While presenting the facts collected during the study period, we intend to draw a parallel comparison of the same with the NFHS-5 survey data of Sonitpur district in order to ascertain the significance of the current data.[7] The WHO's proclamation on March 11, 2020, that the COVID-19 outbreak in Wuhan, China, was a pandemic and the imposition of complete national lockdowns, or orders for regions or entire nations to remain at home, coincide with this decrease in immunizations. Health experts have been forced to halt COVID-19 vaccination campaigns as hospitals prepare for a surge of severely ill patients and the disruption of regular services around the world.[8] VPDs could prevent 84 lives for every SARS-CoV-2 infection mortality that occurs during RI clinic visits. hence surpassing the increased risk of COVID-19 fatalities linked to vaccination clinic visits. According to the assessments of Zar et al and the Spanish Association of Paediatrics, vaccination coverage decreased by 5% to 60% in March 2020 when compared to the monthly average for the January 2019-February 2020 period.[9] The observed shift in vaccination rates in England from 2019 to 2020 fluctuated throughout the COVID-19 pandemic.[10] Santoli et al and Chanchalani et al noted a significant drop (about 75%) in the number of physician-ordered vaccinations since January, when the first COVID-19 case was discovered.[11,12] A registry used to monitor immunization status data was examined from baseline (4 February 2020 to 22 March 2020) and contrasted with the COVID-19 lockdown (23 March 2020 to 9 May 2020) and post-COVID-19 lockdown (10 May 2020 to 6 June 2020) periods. Significant regional heterogeneity was shown by a geographic analysis. The worst-hit areas were slums and densely populated squatter settlements, which are high-risk areas with historically poor immunization rates. In its biweekly situation report, GAVI, the Vaccine Alliance, painted a similar image throughout Pakistan.[13] After the lockdown, health visits in South Africa decreased by more than 50% (11.8 to 4.5 visits/day/clinic), but they somewhat recovered after the lockdown (+1.1 visits/clinic/day).[14] Similarly, Kirmani et al reported a dramatic decrease in clinic visits (1800 to 400) during the week that a rigorous lockdown was declared.[15] Nearly 60% of parents had cancelled their child's appointment, and parents' concerns about their children's potential exposure to COVID-19 in medical facilities were the main cause of the reduction.[16] A overall decrease in outpatient visits was noted by nearly all (98.2%) of the paediatricians polled for another study. Furthermore, one study found that the average number of daily visits to the immunization clinic during the lockdown decreased by 53% when compared to the six months prior to COVID-19.[17] According to a study of paediatricians in Tuscany, more than 90% of them kept up their vaccinations at that time.[18] By June 19, 2020, there had been 54 polio cases reported this year, over four times as many as there had been in 2019 (12 cases).[12] In Pakistan, 78% of these were found, while in Afghanistan, 22%. A closer look shows that even before the Global Polio Eradication Initiative (GPEI) discontinued SIAs in March 2020, the number of polio cases was already high-40 in January 2020 compared to 9 in January 2019.[19] According to the 45-day measure, children who were not infected with COVID had lower vaccination delays (57% vs. 59%, $p<0.01$) and greater DPT3 vaccination rates (84% vs. 70%, p-value <0.01) than children who were infected.[20] The NFHS 5- data depicted that 90% of the babies received BCG birth dose but there was no data in regards to OPV birth dose and Hepatitis B birth dose. However, in the present study, it is seen that 96.25% babies received BCG at birth, 80% received OPV 0 dose and 76% of the babies received Hepatitis B at birth comparing to study doses administered at birth, children with COVID-19 had a 2% lower chance of receiving BCG and hepB0 than children without the virus.[20] In the NFHS 5 data, 96% of the babies received 3 dosages of OPV at weeks 6, 10, and 14. In the present study, it is seen that 100% of the babies received 3 dosages of OPV at weeks 6, 10, and 14. In the NFHS-5 data, 75% of the population received all 3 doses of Pentavalent vaccine while 100% of the babies received all three Pentavalent vaccination shots in the present study comparing to the 45-day measure, children who were not infected with COVID had lower vaccination delays (57% vs. 59%, $p<0.01$) and greater DPT3 vaccination rates (84% vs. 70%, p value <0.01) than children who were infected.[20] According to NFHS 5 data, 62.4% received 3 doses of rotavirus vaccine. While in the present study, 96.25% of the children received rotavirus vaccine at 6 weeks, 97.5% children received rotavirus vaccine at 10 weeks and 93.75% children received rotavirus vaccine at 14 weeks.

According to NFHS 5 data, 75% of the population received all the recommended vaccine at 9 completed months. In the present study, 96.25% of the babies received all the vaccines at 9 completed months. From the present study it is also seen that 30% of the population received 2 doses of PCV. This is because the pneumococcal conjugate vaccine was availed in Bihaguri BPHC, Assam by July 2021. Thus, the vaccine was not available to those born before July 2021 and thus they are not considered as partially immunized. In the present study, they have been considered as fully immunized. In NFHS-5, 77% of the Infants between the ages of 12 and 23 months received all vaccinations. In the present study, 65% of the 12- to 23-month-old children received all recommended vaccinations, which is similar to the findings of the Meshram et al study.[5] For walk-in clients, immunization services must be offered at facilities whenever possible.[21]

This study has few limitations. Two months follow up may over look long term effects of failing the immunization status and improvements beyond this period. The small sample size has limited the study result due to limited resource availability and the house hold survey have incomplete filling or misplacements of MCP card decrease the participant to be included in the study.

CONCLUSION

Among the study population 91.25% respondents were mothers. 47.50% of the children were male and 52.50% children were female. 91.25 % of the deliveries were conducted by doctors. 96.25% babies received BCG at birth, 80% received OPV 0 dose, hepatitis B was given to 76.25%, at 6 weeks 26.25% received PCV 1st dose, at 14 weeks 30% received PCV 2nd dose, at 9-12 months, 28.75% received PCV booster dose. 65% of the children between 12 and 23 months old received all vaccinations.

Recommendations

The results of the survey have provided some insight into the children's immunization status in the Sonitpur District's chosen research region. The present study's preceding findings have led to the formulation of the subsequent recommendations. Increase the awareness of parents regarding vaccine preventable diseases. Increase the storage capacity of vaccines at the vaccination site. Improving the process of data records of immunization with respect to time place and schedule by ANM. Implementation of advanced services like SMS, email, etc for imparting the information about time, place and schedule for vaccination. Health professionals should be well-informed about the adverse effects of different vaccines so that adverse effect following immunization will not be the cause of incomplete vaccination.

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