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Original Research Article

Immunization coverage evaluation in a rural block of Haryana, India

Dr. B. M. Vashisht[1], Dr. Vikram. A[2], Dr. Himanshu Bhardwaj [3], Dr. Neeraj Pawar[4], Dr. Brijesh Kumar[5], Dr. Sangeeta[6], Dr. Jai Parkash[7], Dr. Jyoti Kaushik[8]
[1]Professor, [2,3,4,5,6,7,8] Residents, Department of community medicine, PGIMS, Rohtak, Haryana

***Corresponding author**
Dr. B. M. Vashisht
Email: drbmvashisht@rediffmail.com

Abstract: An estimated 1.5 million children worldwide die each year of diseases that can be readily prevented by vaccines. In India, the latest NFHS-4 (2015-2016) revealed that 62 %children(63.9 % in urban and 62.3 % in rural) aged 12-23 months were fully immunized. Still a lot of gap is there in immunization coverage in the country, especially considering the aim of UIP we still lag behind the target. The present study was conducted with aim of knowing the coverage of primary immunization of infants (12 months -23 months) & to know about the determinants related to immunization practices in a rural block of Haryana, India. A population based cross sectional study was conducted among 210 children aged (12-23 months) living in Lakhan Majra block of Rohtak district, Haryana during Nov & Dec 2016.30 X 7cluster sampling used by WHO for coverage evaluation surveys was used in our study as the sampling technique. The survey on immunization status was done in each selected cluster on 7 eligible children to find out the immunization coverage of the children living in that area. Collected data were analyzed using frequencies and percentages. Immunization card was available for 70.4 % of children.The overall BCG coverage found was 100 %, Pentavalent 100 % and OPV coverage 100% each and measles coverage was 90.5%. 89.5% of children were immunized timely with BCG (mean delay – 2.13 days, median delay – 10 days, range of delay – 2 to 113 days), 80.9% with three doses of Pentavalent and OPV (mean delay -4.47 days, median delay -15 days, range of delay – 2 to 124 days), 75.2% with measles vaccine (mean delay – 4.31 days, median delay – 30 days, range of delay – 14 to 74 days). 9.5% of children were partially immunized. Most common reason for partial immunization was “mother was too busy (60%)”followed by “unaware of need for immunization (10%)”, child ill not brought (10%), wrong notions on contraindications (10%). Though the immunization coverage was satisfactory quantitatively but qualitatively, there was delay in receipt of vaccines at the right time. Hence, the IEC activities have to be enhanced so that children are vaccinated in time as per immunization schedule and they get the maximum benefit of immunization.
Keywords: Immunization, Cluster Sampling

INTRODUCTION

An estimated 1.5 million children worldwide die each year of diseases that can be readily prevented by vaccines[1].The WHO Expanded Programme on Immunization (EPI) recommends that all children receive one dose of BCG, three doses of diphtheria–pertussis–tetanus vaccine (DPT), three doses of oral polio vaccine (OPV), three doses of hepatitis B vaccine and one dose of measles vaccine.

The latest WHO and UNICEF data on global immunization coverage shows that 86% of the world’s children received the required 3 doses of Diphtheria tetanus pertussis containing vaccines (DTP3) in 2015, a coverage level that has been sustained above 85% since 2010. As a result, the number of children who did not receive routine vaccinations has dropped to an estimated 19.4 million, down from 33.8 million in 2000[1]. However, this progress falls short of global immunization targets of the Global Vaccine Action Plan (GVAP) for the Decade of Vaccines of achieving 90% or more DTP3 vaccination coverage at the national level and 80% or more in all districts in all countries by 2015[2].

Gaps in immunization coverage

Among the 194 WHO Member States, 126 countries achieved and sustained the 90% immunization target for DTP3, up from 63 in 2000. Many of these countries, especially the low and middle income

countries, need to continue strengthening their health systems as they add vaccines to their national programmes so that coverage with all vaccines reach and sustain at 90% or more target[2].

National coverage estimates often mask large inequities in coverage within countries. Achieving high and equitable coverage requires targeted actions at subnational levels[2].

In India, in 1985, the Universal Immunization Programme was started with the aim of achieving at least 85% coverage of primary immunization of infants, i.e. with three doses of DPT and OPV, one dose of BCG and one dose of measles by the year 1990[3].

Receiving three doses of DPT is considered one of the key indicators of childhood vaccine coverage. By this parameter, in 2013, India accounted for the single largest number of partially vaccinated children in the world. Of the 21.8 million children worldwide who did not receive three doses of DPT, 6.9 million were from India[4].

The latest (2012) Rapid Survey on Children, suggests that Coverage of BCG was 91 % , DTP3 was 75%, which shows marked improvement in comparison to figures from last decade (2002) pertaining to District Level Household Survey (2002-2004) showing 75% coverage for BCG & 58% for DPT3[5]. NFHS-4 (2015-2016) revealed 62 % children(63.9 % in urban and 62.3 % in rural) aged 12-23 months were fully immunized (BCG, measles, and 3 doses each of polio and DPT). Still a lot of gap is there in immunization coverage in the country, especially considering the aim of UIP we still lag behind the target. Not many studies have been done on immunization coverage evaluation especially in Haryana.

This study was thus undertaken in a rural block of Haryana with aim of knowing the coverage of primary immunization of infants (12 months -23 months) & to know about the determinants related to immunization practices.

METHODS

Setting:

The study was conducted in Block Lakhan Majra, which is a rural field practice area attached to Department of Community Medicine PGIMS Rohtak. It was conducted during Nov. Dec 2016.

Study Design:

Population-based cross-sectional study.

Study Subjects:

Children aged 12 months to 23 months

Sample Size:

210 eligible children

Sampling technique:

30 X 7 cluster sampling used by WHO for coverage evaluation surveys. For the purpose of the study, the population of Lakhan Majra block was divided into 30 clusters using cluster sampling method. Then survey on immunization status was done in each selected cluster on 7 eligible children to find out the immunization coverage of the children living in that area (i.e. the population being surveyed).

Sample selection:

A central location was selected in each village or town such as a market, a temple or Chaupal. The location was selected near the approximate geographical centre of the village or area preferably away from any health post located in the area as the coverage was supposed to be better around health post area. Randomly, a direction was chosen from the selected location. In this direction, first house was randomly identified & consecutive houses were included. This way seven children were included from each area after obtaining verbal informed consent.

Statistical analysis:

Data were analyzed using frequencies &percentages.

RESULTS AND DISCUSSION:

The overall BCG coverage found was 100 %, pentavalent 100 % and OPV coverage 100% each and measles coverage was 90.5% showing that the set goal of immunization was achieved [Table 1].

Table 1: Immunization coverage of various vaccines

Vaccine	Children immunized Number (%)
BCG	210 (100)
Pentavalent	210 (100)
OPV	210 (100)
Measles	190 (90.5)

The coverage of the individual vaccines was100% except measles for which it was 90.5%.

Table 2: Immunization status of study participants(n=210 each for children)

Parameter	**Children** Number (%)
Immunization card available	148 (70.4)
Fully immunized	190 (90.5)
Partially immunized	20 (9.5)

Immunization card was available for 70.4 % of children who participated in the study. The results are much better than those found by Chaturvedi etal (35.2%) [10] and Panwar et al (19.9 %)[8]. 90.5 % children and 97 % mothers were fully immunized, whereas, 9.5 % of children and 2.8 % mothers were partially immunized. None of the study participants were unimmunized. (Table 2). The proportion of un immunized children found by Chaturvedi et al[10] Panwar et al[8] and Chandra et al[9] were 30.8%, 45.2% & 46.8% respectively. Nandan et al[6] found 72.2%, 27.8% and 30.9% children to be fully immunized in three rural districts of Almorah, Etawah and Mathura following the Multi Indicator Rapid Assessment (MIRA) survey technique, while Multi Indicator Cluster Survey (MICS)[7] reported somewhat lower coverage (16.1%) in rural areas.

Considering the timely administration of vaccines, 89.5% of children were immunized timely with BCG (mean delay – 2.13 days, median delay – 10 days, range of delay – 2 to 113 days), 80.9% with three doses of Pentavalent and OPV (mean delay -4.47 days, median delay -15 days, range of delay – 2 to 124 days), 75.2% with measles vaccine (mean delay – 4.31 days, median delay – 30 days, range of delay – 14 to 74 days). The IEC activities have to be enhanced so that children are vaccinated in time as per immunization schedule and they get the maximum benefit of immunization.

Table 3: Reasons for Partial immunization (n=20)

Lack of information	**Number (%)**
1.Unaware of need for immunization	2 (10)
2.Wrong notions on contraindications	2 (10)
3. Fear of adverse reactions	1 (5)
Obstacle	**Number (%)**
1. Mother too busy	12 (60)
2. Child ill, not brought	2 (10)
3. Inconvenient timings	1 (5)
Vitamin A Prophylaxis	**Number (%)**
Not given	23 (10.95)

In all 20 children out of 210 were partially immunized. Table 3 shows reasons for partial immunization. Most common reason for partial immunization was "mother was too busy (60%)"followed by "unaware of need for immunization (10%)", child ill not brought (10%), wrong notions on contraindications (10%), fear of adverse reactions (5%), inconvenient timings (5%) etc. Vitamin A prophylaxis was not given to 11 % of children. The study results thus reflect the need for strengthening IEC activities. In addition, the responsibility for child immunization has to be shared by both parents.

CONCLUSION

Quantitatively, the coverage for BCG, pentavac & polio vaccines were cent percent but measles coverage was low (90.5%). Qualitatively, there was delay in receipt of BCG vaccination among 11.5% children. About one fifth of children did not receive pentavac and polio vaccination as per schedule. The measles vaccination was delayed in one fourth of the children, thus exposing them to the risk of these infections. The IEC activities have to be enhanced so that children are vaccinated in time as per immunization schedule and they get the maximum benefit of immunization.

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