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Original Research Article

Urban immunization: a story of meticulous policy implementation

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ABSTRACT

Background: Vaccination of under 5 children is a crucial process for making child disease free against vaccine preventable diseases. Intensified mission Indradhanush focus on improving immunization coverage to ensure full immunization to more than 90% by December 2018 instead of earlier set target of 2020.
Methods: This cross sectional study aimed to assess the full immunization and reasons for partial or no immunization in children less than two years of age in a metropolitan overcrowded area. Total 246 children were enrolled after applying complete enumeration method of sampling. Parents were interviewed by home to home visit and data recorded through immunization card/recall method.
Results: 142 (87.65%) children were found fully immunized. The vaccine wise coverage was 100% for BCG, 95.1% for pentavalent and OPV third dose and 91.1% for measles vaccines. Father's education was significantly associated with partial immunization. Fear, unawareness, H/O AEFI, inconvenient timings are the major reasons for partial immunization.
Conclusions: The target of mission Indradhanush is to achieve 90% by December 2018 is on the verge of fulfillment in this study area. As the age of the child gets increases the adherence for subsequent vaccination decreases. Emphasis should be given on Fathers education and community awareness regarding importance of Vaccination.

Keywords: Full immunization, Urban immunization, Reasons, Mission Indradhanush

INTRODUCTION

India is a diversified country with more than 1.2 billion population and which mostly resides in rural part. In recent years the rural population migrating to urban and metro cities seeking for employment and better living conditions but its ultimately increasing urban slums with compromised living and health conditions.

India's Universal Immunization Programme (UIP) caters second most populous country in world with largest number of immunization sessions organized, quantities of vaccine used, number of beneficiaries. Immunization is still the most cost-effective interventions to prevent the suffering from vaccine preventable diseases. India has the largest number of births in the world – more than 26 million a year – and also accounts for more than 20 per cent of child mortality worldwide. Nine million immunization sessions are organized each year to target these infants and 30 million pregnant women for routine immunization (RI).[1] The benefits of immunization are not only improve health and life expectancy but also have the social and economic impact at both individual and community levels.

"Mission Indradhanush" launched in December 2014 aimed to fully immunize more than 90% of new-borns by 2020 through innovative and planned approaches to reach

all children. Through intensified mission Indradhanush (IMI), Government of India aims to reach each and every child under two years of age and all those pregnant women who have been left uncovered under the routine immunization programme. The special drive will focus on improving immunization coverage in select districts and cities to ensure full immunization to more than 90% by December 2018 instead of earlier set target of 2020. Between 2009 and 2013, the increase in immunization coverage had been at 1% per year. A study in different states of India showed that 63.3% children were fully immunized, 27.1% were partially immunized, and 9.6% were unimmunized.[2] Another study in urban slums of Lucknow district showed that only 44.1% children were fully immunized, while 32% were partially immunized, and 23.9% were unimmunized. [3] Between 2015-16, India's immunization coverage increased by 6.7% per year.[4] The full immunization percentage of Maharashtra state was 56.3% against 62.0% of country average as per NFHS 4 report.[5]

Vohra et al found that the major reasons for failure of immunization were postponing it until another time, child being ill and hence not brought to the centre for immunization, unaware of the need of immunization, place of immunization being too far, no faith in immunization, unaware of the need to return for 2nd and 3rd dose, mother being too busy, fear of side reactions, wrong ideas about immunization.[6] in another study Sharma et al reported that non availability of vaccine at the centre, long waiting time and poor awareness of parents about importance of immunization were the important reasons for Partial immunization.[7]

Immunization program is functioning in India from more than 30 years, still every third child is partially immunized. Government of India has started mission Indradhanush program to overcome this failure. The mission recently entered in its intensified phase to continue its success which is achieved in recent years. As compare to other fertility and demographic indicators, State of Maharashtra is behind the country average for immunization.

Thus this study aims to assess the immunization status of children age less than 2 years in a metropolitan city and the subsequent reasons for partial or no immunization.

Objectives

- To assess the full immunization rate among children residing a metropolitan study.
- To evaluate the vaccine-wise vaccination coverage among study subjects.
- To study the different reasons for partial or no immunization.

METHODS

This is a cross sectional study carried out at residential building campus of tertiary medical college and surrounding chawls of campus area. The study carried out after completion of intensified mission Indradhanush round from month September 2017 to December 2017. Children of ages between 0-23 months was studied for assessment of immunization. All the residential building of hospital campus and surrounding chawls of campus were enlisted with the help of Social workers of department of community Medicine. Door to door survey was conducted by resident doctors of Community Medicine for collection of data. Total 246 children were enrolled after applying complete enumeration method of sampling. Parents of children less than 24 months were explained study procedure and purpose afterward their verbal consent was obtained for participation into study. An utmost efforts for enrollment were given to reluctant parents to avoid selection bias. Locked houses were visited again for complete enumeration. Parent of child were asked for the immunization card for filling the dates of vaccination in case proforma. In case of unavailability of immunization card recall method of interview was used for filling the prforma. Data entry was done by an investigator and then further analysed online using OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version 3.01. Descriptive statistics and Chi square test were applied to assess relation between different variables.

Operational definition

Full immunization: Defined as per the 1998 World Health Organization (WHO) guideline viz. receipt of one dose of BCG vaccine, three doses of DPT/Pentavalent and OPV vaccines, and one dose of measles vaccine by infants in the age group 12-23 completed months.

No immunization: Defined as failure of an infant 12-23 months old to receive even a single dose of the vaccines listed above

*Partial immunization***:** Defined as receipt of vaccine doses between 'no vaccination' and 'complete vaccination'.

RESULTS

Total 9 residential building of hospital campus and 5 surrounding chawls were surveyed for data collection. 246 children between the age group of 0-23 completed months were enrolled in the study. 136 (55.3%) were male remaining 110 (44.7%) were female children. 100 (40.3%) Fathers and 158 (64.3%) mothers were not studied beyond 10th standard, but no one was illiterate. 162 children were in the age group of 12-23 months and 84 were children belonged to 0-11 months age group.

Table 1: Vaccine-wise vaccination coverage.

Vaccine	Eligible for Vaccine as per age	Vaccine received	Vaccine received (%)	INCHIS 2 report 2015[4] (%)		WHO EPI factsheet India 2016[8] (%)		MOHFW Maharashtra state 2013-14[9] (%)	NFHS 4 Maharashtra Report[10] (%)
				India	Maharashtra	India	Maharashtra		
BCG	246	246	100	93.1	97	89		105.3	90
OPV zero dose	246	232	94.3	NA	NA	NA	NA	NA	82.7
Hepatitis birth dose	246	222	90.2	NA	NA	NA	NA	NA	69.6
Pentavalent/DPT first dose	240	238	99.2	88	95.9	NA	NA	NA	85.8
Pentavalent/DPT second dose	218	206	94.5	83.4	91.7	NA	NA	NA	80.9
Pentavalent/DPT third dose	206	196	95.1	75.3	86.2	88	>90%	104.5	74.9
OPV first dose	240	238	99.2	90.6	96.9	NA	NA	NA	89
OPV second dose	218	206	94.5	85.9	95.4	NA	NA	NA	84.3
OPV third dose	206	196	95.1	77.1	90	86	>90%	104.5	67
IPV first dose	240	56	23.3	NA	NA	NA	NA	NA	NA
IPV second dose	206	18	8.7	NA	NA	NA	NA	NA	NA
Measles	180	164	91.1	84.9	92.7	88		103.4	82.8
Full immunization	162	142	87.6	73.5	84.2				**56.3**

NA: Data was not available.

Table 2: Different reasons for partial or no immunization (in percentage).

Reason	Present study	Kumar et al.[11]	Sharma et al.[7]	INCHIS-2[4]
Fear for vaccination	26	28.8	6.67	22.6
History of reaction in last vaccination	24	11.9	NA	16.4
Unaware regarding vaccination (schedule/place/benefits)	22	52.4	20	61.6
Sick child	7	12.7	NA	NA
Inconvenient time	19	NA	6.67	20.3

NA: Data was not available.

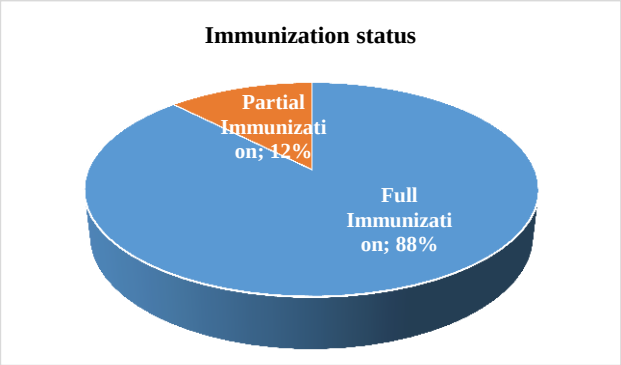

Figure 1: Immunization of children in the age group of 12-23 months.

In present study 142 (87.65%) children in the age group of 12-23 months were fully immunized (Figure 1). The vaccine wise coverage was 100% for BCG, 95.1% for pentavalent and OPV third dose and 91.1% for Measles vaccines. The coverage for pentavalent vaccine first dose (99.2%) is more as compare to second (94.5%) and third dose (95.1%). Similarly measles coverage was only 91.1% as compared to others. This shows that the adherence for vaccination decreases as age of child increases (Table 1 and Figure 2).

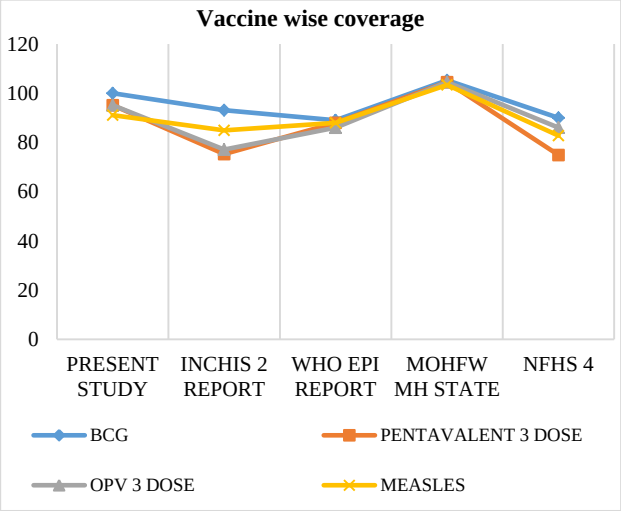

Figure 2: Vaccine wise coverage evaluated by different organizations (in percentage).

It has been observed that father's education was significantly associated with child vaccination. Number of children who has missed their MMR vaccine is more among those whose father studied less than 10th standard (Chi square test value: 28.40, df: 3, p<0.000), similar results were observed with Measles vaccination (Chi square test value: 11.43, df: 3, p= 0.01).

Reasons for missed vaccination were fear for vaccination (26%) history of adverse event in previous vaccination (24%), unawareness regarding immunization (22%) and inconvenient timing of vaccination. (19%) (Table 2).

DISCUSSION

246 children in the age group of 0-23 were studied to evaluate Immunization status, vaccine wise coverage and reasons for missed doses. Education of parents was found less as majority of fathers (40.3%) and mothers (64.3%) were not studied beyond 10th standard. Study noted 87.65% full immunization and zero percent no immunization. The vaccine wise coverage was above 90% for all antigens (except IPV) and it is found 100% for BCG. Current study found adherence for vaccination decreases as age of child increases. Father's education was significantly associated with child vaccination. Missed MMR and measles beneficiaries were mostly of those fathers who were less studied. Fear of vaccination, previous AEFI, unawareness and inconvenient timing of vaccination are important reason noted in current study for partial immunization.

In current study 142 (87.65%) children in the age group of 12-23 months were fully immunized compared to 73.5% and 62% as per INCHIS 2 and NFHS 4 report respectively.[4] The vaccine wise coverage was 100% for BCG, 95.1% for pentavalent and OPV third dose and 91.1% for Measles vaccines. The vaccine coverage is found more as compared to the findings of INCHIS 2 report, NFHS 4 report, reports of MOHFW and WHO EPI reports (Table 1). The full immunization and vaccine wise coverage is in correspond with intensified mission Indradhanush targets which aim to achieve full immunization by December 2018. The most common reasons for missed vaccination are fear for vaccination (26%) history of adverse event in previous vaccination (24%) and unawareness regarding immunization (22%). Similar reasons were reported in studies conducted by Kumar et al, Sharma et al.[7,11] Inconvenient timing of vaccination is important reason identified by current study (19%) and INCHIS 2 report (20.3%).

CONCLUSION

Vaccination of under 5 children is a crucial process for making child disease free against vaccine preventable diseases**.** This cross sectional study aimed to assess the full Immunization and reasons for partial or no immunization in children less than two years of age in a metropolitan overcrowded area. This study revealed 87.65% full immunization among study subjects residing in a urban overcrowded area. The target of mission Indradhanush is to achieve 90% by December is on the verge of fulfillment in this study area. The vaccine coverage is almost 100% for BCG and three doses of pentavlent and OPV vaccine and it is more than 90% for measles vaccine. But it has been observed that as the age of the child gets increases the adherence for subsequent vaccination gets decreases. Father education found to be a significant factor for immunization. The focus was always given on parents education for better utilization of health services, but as India is a male driven society, an equal focus should be given on father education also for

betterment of health in society. There are many reasons by which children missed their doses, but it is a serious matter of concern that after 30 years of immunization program people are still unaware with schedule, importance of vaccination and are having AEFI apprehension.

Mission Indradhanush has set a perfect example of meticulous planning by which country can aim a full immunization by December 2018.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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