

A study to evaluate completeness of vaccination among children of 12-month to 23-month age group and the reasons of dropouts in a tertiary care center - A descriptive cross-sectional study

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Abstract

Background: Immunization significantly lowers the morbidity and mortality rates in children by protecting them from Vaccine Preventable Diseases. India has one of the lowest vaccination coverage rates in the world. NFHS-3 revealed that about 43.5% was only fully immunized in India as per National Immunization schedule¹. The objectives of the study were to evaluate the completeness of vaccination in children of age 12 months to 23 months age and reasons of dropouts in tertiary care. **Method:** A descriptive cross-sectional study done in department of Pediatrics, L.N Medical College and Research Centre and J. K. Hospital, Bhopal. Hospital based study for period of 2 year. Total 600 cases studied and data collection from parents coming to pediatrics OPD via interview Questionnaire **Results:** Out of 600 children, 549 (91.5%) were fully immunized, 48 (8%) were partially immunized whereas only 3 (0.5%) were non-immunized. Fully immunized status among the children of literate mother was higher than illiterate mother. Majority of the patients who were fully immunized had age between 18-20 months (55.9%). This study revealed higher drop out of 0.5% for BCG +OPV+HBV (at birth) vaccination, 1% for PENTAVALENT+PCV+IPV+OPV+ROTA (6wks), 1% for PENTA+OPV+ROTA (10wks). **Conclusion:** Vaccination coverage was quite low as compared to state data which indicates the insufficient services provided in slums. So consistent efforts need to be made in slums so that vaccination coverage can be improved for better survival of children.


Keywords: Immunization, vaccination, children, Slums.

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Received Date: 24/03/2022 Revised Date: 12/04/2022 Accepted Date: 03/05/2022

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Access this article online

Quick Response Code:	Website: www.medpulse.in
	DOI: https://doi.org/10.26611/10142311

INTRODUCTION

Children are the future of any country, and their development is just as important as the development of any

other asset. For children's healthy development, immunization is a highly effective public health strategy. Immunization is a simple, safe, and effective way to protect people from some of the world's most contagious diseases. Immunization reduces the spread of disease and thus protects the population from harmful diseases. As a preventive health measure, immunization is critical for children because it shields them from the majority of life-threatening diseases that arise in childhood.¹ In order for the child's immunization to be successful, they must complete the full course of immunization doses. More than 3 million lives are saved each year thanks to immunization, which has the potential to save an additional 1.5 million children each year.² Although immunization coverage has

increased steadily in recent years, the average level is still far below what would be ideal. Only 62 percent of infants in India have been fully immunized, a far cry from the 90 percent target set by the National Family Health Survey – 4.³ There are numerous non-governmental organizations working with UNICEF and its affiliates around the world to make sure that all children have access to vaccines, especially those who are most in need. Some of these organizations include WHO, GAVI, the Vaccine Alliance, the US Centers for Disease Control, and the Bill and Melinda Gates Foundation.⁴ In 1974, the World Health Organization (WHO) launched the Expanded Program on Immunization (EPI) to control Vaccine Preventable Diseases worldwide (VPDs). In 1978, the Government of India approved this. Diphtheria, whooping cough, tetanus, polio, tuberculosis, measles, and hepatitis B are all still prevalent in the United States, as are a number of other VPDs. Selected districts and states also offer vaccinations against Hib and JE, the two most common causes of meningoencephalitis in Japan.⁵ It was renamed the Universal Immunization Program (UIP) on November 19, 1985, to protect all infants from six life-threatening diseases, including polio. In 1992, UIP joined the Child Survival and Safe Motherhood (CSSM) programme. In addition to UIP, CSSM includes the Safe Motherhood Program (SMP). Reproductive Child Health (RCH) was integrated into the UIP in 1997, and the NRHM made it a priority area in 2005.⁵ It was announced on December 25, 2014, that the Ministry of Health and Family Welfare (MoHFW) was launching Mission Indradhanush as a nationwide campaign to immunize all children and pregnant women who are still unvaccinated or only partially immunized by 2020 under the Universal Immunization Program (UIP). According to mission Indradhanush, the goal is to *get all* children in India fully immunized by 2020, up from a current coverage rate of about 65 percent in 2013.⁶ A mere 12.5 percent of India's children were aware of the existence of Mission Indradhanush, despite the fact that the programme has been in operation for more than 30 years.⁷ Parents' knowledge and attitudes about immunizations, services provided, opportunity costs (such as lost earnings or time) incurred by parents, socio-demographic characteristics of parents, level of education, lack of health workers and vaccination teams and inadequate infrastructure and supplies are some of the factors that contribute to low immunization coverage in a given country or region. The effectiveness of a programme can also be affected by religious convictions, traditional remedies, and a general distrust of Western medicine.⁸ More than a few studies show that parents are concerned about the safety of new vaccines as well as the potential for side effects, and they refuse to vaccinate their children based on these concerns.⁹ Vaccines carry a small

risk of serious harm, such as an allergic reaction, just like any other medicine. Experts, on the other hand, point out that vaccines carry a much lower risk of harm than infectious organisms.¹⁰ In India, one method of lowering infant and child mortality is immunization. Thus, the study's aim is to examine the completeness of immunization in children between the ages of one and two, and to determine why some children drop out of tertiary care facilities.

MATERIALS AND METHODS

The present study entitled “A study to evaluate completeness of vaccination among children of 12 months to 23 months age group and the reasons of dropouts in a tertiary care center” was conducted as a descriptive cross-sectional study at Department of Paediatrics, L.N. Medical College and Research Centre, Bhopal during the study period of two years. The study was conducted on children of age group 12- 23 months.

Study design: A descriptive cross-sectional study

Place of study: Department of Pediatrics, L.N Medical College and Research Centre and J. K. Hospital, Bhopal.

Duration of study: Hospital based study for period of 2 year.

Sample size: 600 (using statistical formula: $n = Z^2 pq/l2$)

Source of data: Data collection from parents coming to pediatrics OPD via interview questionnaire.

Inclusion criteria: Children aged between 12 months to 23 months attending pediatric opd.

Exclusion criteria: Children who are seriously ill. Children with progressive neurological disease. Immunocompromised child. Children enrolled during previous visit. Parents not willing for interview.

METHODOLOGY

This was descriptive cross-sectional study done using a prevalidated predesigned questionnaire among children of age group of 12-23 months attending pediatric OPD of J.K. Hospital.

Materials and Methods

Definitions (As per Mohfw India and WHO)

Fully Immunized: The child who has received all primary doses of BCG, DPT/OPV123, Measles and 1st booster doses of OPV/ DPT as recommended in NIS (National Immunization schedule).

Partially Immunized: If child has missed even a single dose as mentioned in immunization schedule.

Unimmunized: If the child not received even a single vaccine dose.

The pre-validated predesigned questionnaire contains six categories of data:

Identification of the household and the child; Family information extracted from the DSS data base; Socio

economic status information; Birth place of the child and exposure to vaccination information; Knowledge of parents about immunization.

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Committee before starting the study. A written informed consent was obtained from the care giver or parent of all the participants in their language.

RESULTS

The present study entitled “A study to evaluate completeness of vaccination among children of 12 months to 23 months age group and the reasons of dropouts in a tertiary care center” was conducted on a total of 600 children belonging to age range of 12 months to 23 months.

Table 1: Age distribution in study population

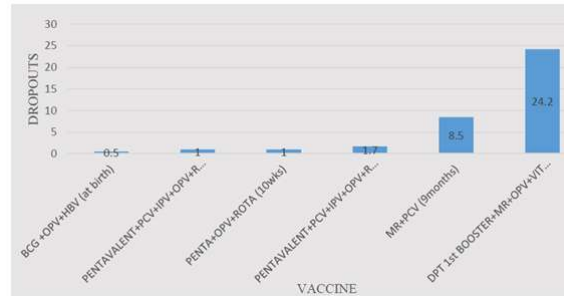
	Age group in month	Immunization status of the child			Total
		Fully immunized	Non immunized	Partial immunized	
	12-14	70	1	8	79
	15-17	141	1	13	155
	18-20	307	1	20	328
	20-23	31	0	7	38

Majority of the patients who were fully immunized had age between 18-20 months (55.9%). Partially immunized majority had age between 18-20 months (41.7%). Nonimmunization was equally distributed among the age group of 12-14, 15-17 and 18-20 months. The distribution of age groups was similar among the immunization status of children as revealed by the insignificant p value of 0.163. Full immunization was more common among males (50.5%) compared to females (49.5%). Partial immunization was prevalent in males (68.8%) compared to females (31.3%) similarly non-immunization was also more common in males (66.7%) compared to females (33.3%). A significant ($p < 0.001$) difference was obtained between Immunization status of the child and place of living. It was found that majority of the children living in urban area had full immunization (95.4%) compared to those living in rural area (4.6%). Among the fully Immunized children majority were Hindu (96.4%) whereas as 2.7% were Muslims.



Graph 1: Immunization status of children based on socioeconomic scale

Majority of the fully immunized children belong to urban class III class (52.46%) followed by urban class II class (33.52%). Of the children who were partially immunized, majority were from the urban class III class (50%) followed by urban class II (27.08%). Of the nonimmunized children majority were from the rural class IV (66.67%) and rural class III (33.33%). The distribution of socioeconomic with Immunization status of the child was highly significant as revealed by the p value of 0.001 for rural are and < 0.001 for the urban area. (graph1) Partial immunization was mainly observed in those children who had birth order of 1 (41.7%) and birth order of 2 (41.7%). Similarly non-immunization was more common in children who had birth order of 1 (66.7%) and birth order of 2 (33.3%). The distribution of birth order with Immunization status of the child was significant with p value of 0.003. A significant difference ($p = 0.021$) was obtained between Immunization status of the child and place of delivery. It was found that majority of the children who took birth in hospital had full immunization (93.1%) compared to those delivered at home (6.9%). A significant difference ($p < 0.001$) was obtained between Immunization status of the child and the mother's education. Majority of the children who had no-immunization, their mother's had education till 10th class (33.3%) or till mid school (33.3%) whereas those having partial immunization has little higher education compared to nonimmunized children.



Graph 2: Individual vaccine and coverage

On analyzing the individual vaccine coverage and drop out it was found that there was a drop out of 0.5% for BCG +OPV+HBV (at birth) vaccination, 1% for PENTAVALENT+PCV+IPV+OPV+ROTA (6wks), 1% for PENTA+OPV+ROTA (10wks), 1.7% for PENTAVALENT+PCV+IPV+OPV+ROTA (14wks), 8.5% for MR+PCV (9 months) and 24.2% for DPT 1st BOOSTER+MR+OPV+VIT A (16-18 months). (Graph 2)



Graph 3: Reason for partial or non-immunization (n=51)

Most common reason for partial or non-immunization in present study was postponement of immunization (45.10%) followed by lack of motivation (37.25%), in 25.49 cases child was unwell, 23.53% had lack of knowledge of immunization schedule, for 19.61% cases non-availability of local health worker/Anganwadi worker was the reason (graph 3)

DISCUSSION

Proper immunization is believed to be the most cost-effective way in preventing childhood morbidity and mortality. Despite various efforts, the immunization coverage is still around 62% (NFHS-4). In present study out of 600 children, 549 (91.5%) were fully immunized, 48 (8%) were partially immunized whereas only 3 (0.5%) were non-immunized. In a similar study to find out the vaccination coverage in 59 low performing blocks of Bihar

reported that 11,203 number of children out of 12,331 constituting 90.85% children are fully immunized till the date of survey. Close to 9% (8.8%) children though have started vaccination could not complete it. Rest 0.35% of the beneficiaries are completely left out.¹¹ In our study, the corrected percentage of full immunization is found to be 91.5% which is more than that of the NFHS-4 reports. Majority of the patients who were fully immunized are between 18- 20 months (55.9%) of age, followed by those

having age between 15-17 months (25.7%) and 12-14 months (12.8%). Among the children who were partially immunized majority had age between 18-20 months (41.7%) followed by 15-17 months (27.1%). Non-immunization was equally distributed among the age group of 12-14, 15-17 and 18-20 months as there was only single child in each age group. 38 percent of children in India are not vaccinated in their first year of life.¹² Datta and Mog found that 14 of the 30 children who were not fully immunised missed the Measles vaccine, followed by the third dose of DPT, OPV, and Hepatitis B vaccine in 8 (26.7 percent)¹³ Full immunization, Partial immunization and non-immunization was more common among males compared to females. Datta and Mog found in Mohanpur area, there is no gender difference in the children who are not fully immunised.¹³ The rural areas, urban areas have higher vaccination coverage. Majority of the fully immunized children of urban locality belong to lower middle class (52.46%) followed by upper middle class (33.52%). The majority of the children belonging to nuclear family had full immunization (84.9%) compared to those living in joint family (15.1%). Similarly majority of the non-immunization were from the nuclear family (66.7%). Significant difference ($p=0.021$) was obtained between Immunization status of the child and place of delivery. It was found that majority of the children who took birth in hospital had full immunization (93.1%) compared to those delivered at home (6.9%) Paul *et al.* had noted same in there study⁶⁴ On analyzing the individual vaccine coverage and drop out it was found that there was a drop out of 0.5% for BCG +OPV+HBV (at birth) vaccination, 1% for PENTAVALENT+PCV+IPV+OPV+ROTA (6wks), 1% for PENTA+OPV+ROTA (10wks), 1.7% for PENTAVALENT+ PCV+ IPV+ OPV+ROTA (14wks), 8.5% for MR+PCV (9 months) and 24.2% for DPT 1st BOOSTER+MR+OPV+VIT A (16-18 months).

CONCLUSION

Vaccination coverage was quite low as compared to state data which indicates the insufficient services provided in slums. So consistent efforts needed in slum population so that immunized coverage could be achieved to desired level. Regular follow up of children in the vulnerable age group and education of mothers regarding the immunization schedule will go a long way in reducing the dropout rate and ensuring full immunization. Improvement in the income of the poor, proper health services and quality environment are more important in reducing the morbidity and mortality in slums. Finally, politically will

ie working toward more equitable socioeconomic system is must for sustainable development.

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Source of Support: None Declared
Conflict of Interest: None Declared