

## Original Research Article

# Evaluation of factors, associated with defaulting routine immunization in children

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### ABSTRACT

**Background:** India was one of the first countries to adopt the World Health Organization's Expanded Programme of Immunization (EPI). The program started globally in 1974 and was initiated in India in 1978. Immunization is considered to be one of the most important cost-effective and a powerful public health intervention. Achieving maximum coverage, however, has been a challenge due to many reasons, including high rates of defaulters from the program. The term "defaulter" is used to refer a child who misses the scheduled vaccinations for any reason. The objective of this study was to explore the reasons behind defaulting from the routine immunization program.

**Methods:** A study was conducted in Bowring and Lady Curzon Hospital, Bangalore between January 2012 and December 2012. A total of sixty six children's' details were gathered from mothers of defaulted children. Children below 5 years attending OPD were included in the study. Children above 5 years and inpatients were excluded. Observations and review of relevant documents was done.

**Results:** Of the 66 children, in our study, males were more than females. Children in the age group of 2 years to 5 years were 17(25%) as compared to those between 1 to 2 years. Mothers were more literate than fathers. Muslim children had the best immunization coverage. The main determinant of defaulting was lack of knowledge and awareness regarding immunization by the mothers (21/31%) followed by sickness in children (11/16%), causing them to default immunization schedules

**Conclusions:** The main reason for defaulting from the immunization program was lack of awareness, regarding immunization by mothers in the community.

**Keywords:** Defaulters, Immunization coverage, National immunization programme, Partial immunization, Routine Immunization, Vaccine preventable diseases

### INTRODUCTION

The World Health Organization (WHO) established the Expanded Program on Immunization (EPI) in 1974 to ensure universal access to routinely recommended childhood immunizations. India was one of the first countries to adopt the World Health Organization's Expanded Programme of Immunization (EPI).<sup>1</sup> The

program started globally in 1974 and was initiated in India in 1978. An evaluation by UNICEF (2001) showed that in India, 49% of children are fully immunized which is significantly low.<sup>1</sup> Immunization as per schedule is believed to prevent debilitating illness and disability and saves millions of lives every year. Immunization is one of the most important public health interventions and a cost-

effective method to reduce both the morbidity and mortality associated with vaccine preventable diseases.<sup>2</sup>

Vaccine preventable diseases can be successfully reduced in terms of morbidity and mortality by implementing strategies which ensure high coverage of routine immunization and minimize dropouts and missed opportunities.<sup>3</sup>

The essential requirements for childhood immunization to achieve the desired impact in public health are coverage of immunization services to as many vaccine preventable diseases as possible, maintaining vaccine potency through cold chain and achieving high immunization coverage.<sup>4</sup>

Increasing immunization coverage involves two key elements: increasing access to immunization services and reducing dropout rates. While health systems in developing countries seem to improve access to immunization services steadily, the overall change in coverage remains suboptimal.<sup>5</sup> According to guidelines developed by the WHO, children are considered as fully vaccinated when they have received vaccination against tuberculosis (BCG), three doses of DPT- polio and HBV vaccines, and measles vaccination, along with Vitamin A suspension by the age of 12 months.<sup>6</sup>

The term “defaulter” refers to children who miss scheduled vaccinations for any reason, including health facility problems such as canceled sessions or vaccine stock outs.

Despite a reduction in disease burden of vaccine-preventable diseases through childhood immunization, considerable progress needs to be made in terms of ensuring efficiency and equity of vaccination coverage.<sup>7</sup>

Accurate measurement of vaccination coverage is an essential step in determining expected reduction in morbidity and mortality from vaccine preventable diseases. It is one of the ways to evaluate effective operation of programme. Thus, it is necessary to not only assess the coverage but also to study the social factors influencing immunization and to know the reasons for non-immunization, partial immunization and delayed immunization.<sup>8,9</sup>

The objective of the study was to identify factors associated with defaulting routine immunization in children.

## METHODS

A prospective-descriptive hospital based study was envisioned. Informed consent from parents was obtained. Children below 5 years attending OPD for any ailments were included in the study. Children above 5 years and inpatients were excluded. The data was collected through face-to-face interviews with the mothers/caregivers and

through a review of the immunization cards from 66 children. Subjects were selected by random sampling method and data was collected from January 2012 to December 2012. An oral questionnaire method and written proforma on National Immunization Schedule was prepared.

Demographic particulars of the children under the study were obtained in the proforma. In addition, the birth weight, gestational age, breast feeding practices and the reasons for defaulting immunization to children were obtained by the mother and entered into the proforma. Children who had not received the respective vaccine scheduled for that age for 2 weeks from the date of immunization were considered to have missed immunization. Missing any of the doses of schedule was considered to be partially immunized. Immunization status of these children was analyzed and the cause for partial and non-immunization were studied. STATA-IC 12 was used for statistical calculation and P<0.05 was considered significant.

## RESULTS

The study comprised of 41(62%) males and 25(37%) females. Children in the age group 0 to 6 mths, between 6 months to 12 months, 1 year to 2 years and between 2 to 5 years comprised of 10 (15%), 17(26%), 16(24%) and 23(35%) respectively. Among the 66 children, 36(54%) fathers and 44(66%) mothers were literate parents. With respect to religion, 25(38%) were Hindu children, 35(53%), Muslims and 6(9%) Christians. Only 15(22.72%) were fully immunized, 39(59.09%) partially immunized and 12(18.18%) were not immunized (Table 1).

**Table 1: Demographic profile of children studied.**

Particulars	Number	Percentage	
Gender	Males	41	62%
	Females	25	37%
Age	Less than 6 months	10	15%
	6 months to 12 months	17	26%
	1 year to 2 years	16	24%
	2 to 5 years	23	35%
Literacy	Fathers	36	54%
	Mothers	45	68%
Religion	Hindus	25	38%
	Muslims	35	53%
	Christians	06	09%

The association between birth weight and immunization status was studied. Data showed 3(30%), 5(50%) and 2(20%), out of 10 children with birth weight <2.5kgs, >2.5-3 kgs and >3 kgs were fully immunized respectively. 11 children were partially immunized. Among them 6 children were <2.5 kgs (54%) were >2.5

kgs (56%). Among individual vaccines, coverage was highest for BCG, 54(81%) which was statistically significant and lowest 16(24%) for measles.

Coverage for DPT 3 and OPV 3 was 24(37%). Fully immunized children were 15 out of 66 and among them, 12(80%) were males and 3(20%) were females (Table 2). Majority of the fully immunized children were children between 2 to 5 years, 7 out of 15(22.72%). The association between socioeconomic status and immunization was studied but there was no statistical significance.

**Table 2: Immunization coverage.**

Age	Fully immunized	Partially Immunized	Not immunized	Total
<6 months	3	05	2	10
6-12 months	2	14	1	17
1-2 yrs	3	08	5	16
2-5 yrs	7	12	4	23
Total	15 (22.72%)	39 (59.09%)	12 (18.18%)	66 (99.99%)

**Table 3: Factors for defaulting routine immunization.**

Reasons for defaulting routine immunization	Number	Percentage
Ignorant or not aware of the need for immunization	21	31%
Mothers expressed fear of Adverse Effect Following Immunization (AEFI) or death	08	12%
Mothers thought that the child was too small for immunization	08	12%
Children were sick on the scheduled days of immunization	11	16%
Mothers had lost the immunization cards	04	06%
Mothers were unaware of the place of immunization	06	09%
Other engagements to attend	08	12%

The most common reasons for defaulting of routine immunization included, 21(31%) were Ignorant or not aware of the need for immunization, 11(16%) children were sick on the scheduled days of immunization, 8(12%) mothers thought that the child was too small for immunization and also 8(12%) of them had other engagements to attend. 6(9%) mothers were unaware of the place of immunization. 4 mothers had lost the immunization cards and 8 mothers expressed fear of AEFI or death.

### ***Ignorant or not aware of the need for immunization***

Of the 66 mothers, 21(31%) had no knowledge about immunization schedule or the vaccination dates or about vaccine preventable diseases. 8(12%) of the mothers expressed fear of AEFI or death and other 8(12%) mothers thought their babies were too small for immunization.

### ***Reasons for defaulting from completion of child's immunization***

The main reasons were, 11(16%) of the 66 mothers did not bring their children for immunization due minor ailments like fever, cough, increase in frequency of stools, etc; during the scheduled time for immunization; 6(9%) of the mothers were unaware of the place for immunization; 8(12%) of the mothers had other engagements to attend and 4(6%) of the mothers had lost their children's immunization cards (Table 3).

### **DISCUSSION**

In this study the first borns were better immunized than 2nd or 3rd order children which was comparable to the Vinod P. Chavan and Mahesh B. Maralihalli study.<sup>9</sup> In this study of 41(62%) males and 25(37%) females which was comparable to the study by Nirupam S et al, in which the study revealed that males (39%) had better immunization than females (30%), The same was also comparable to studies conducted by Malini Kar et al, wherein the coverage levels of males were 70.7% and females 29.3% and also to the study by Yadav J et al, which also revealed 63.7% of males being fully immunized and females 57.1%.<sup>10-12</sup>

In this study there was no correlation between birthweight and immunization status. Males were immunized more than females. Immunization coverage was better observed in literate parents, Muslim children had the best immunization coverage. First born children were fully immunized compared to subsequent pregnancies.

In this study the socioeconomic status and literacy factors did not correlate to children with full or partial immunization. Where there was increase in parity, there was less likelihood of having received full immunization coverage. Caring for multiple children can be one of the challenges to vaccination defaulting. In the present study there was no correlation between the literacy rates and level of immunization. The likelihood of defaulting from completion of child immunization was more likely higher among mothers due to lack of health awareness, similar to Hailay Gebretnsae Aregawi et al, study. Promoting immunization through community participation is a proven means to build trust and acceptance of child vaccination. Also fear of reprimand from health personnel on losing immunization cards which was similar to Hailay et al, study and thus not completing full

immunization implies that it is crucially important to increase mother's awareness about immunization through local health awareness programs or follow by Accredited Social Health Assistant(ASHA) workers,

The study being a hospital based study, it does not reflect the total population in a given community and also the sample size was small.

## CONCLUSION

Based on this study, of the total children in the study, 41 males and 25 females, only 15 children were fully immunized. There were many defaulters in the Muslim community, followed by Hindu community. The main reasons for defaulting were lack of knowledge or awareness in the community during the period of 2012, ignorance regarding child's minor illness was not a contraindication for immunization and also parents gave minimal interest to immunization in their busy schedule. Even change of place from mothers' house to in laws places also contributed in defaulting of the immunization schedule.

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