

## Original article

### **Immunization Status of 12-23 months Children in Rural Ahmedabad**

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#### **Abstract:**

**Background:** Immunization is the most effective method of preventing childhood diseases.

**Objectives:** 1) To assess immunization status among children of 12-23 months age group. 2) To find out reasons of left outs / dropouts. 3) To check quality of records in immunization card.

**Methodology:** Community based cross sectional study was conducted at nine villages of seven sub centers of two Primary Health Centers from one block of rural Ahmedabad during October 2011 to January 2012. Performa was prepared on the basis of government immunization card. Information was assessed mainly from immunization card else by directly asking to mother / guardian whenever card was unavailable. Data of 120 eligible children was collected.

**Results:** Immunization card was available for 100(83%) children, among them 89(74%) was government and 11(9%) was private card. Date of birth was noted in card for 94(78%) and birth weight for 62(52%) of children. Out of 120 children, 118(98%) had taken BCG vaccine. BCG scar was seen in 91% of available children. Proportion of fully immunized was 74%, while that of partially immunized was 26%. Gender difference in immunization status was not significant (P=0.59). Vaccine dropout was highest for DPT<sub>1-3</sub>(20%) followed by DPT<sub>1</sub>-measles (16%). Common reasons of partially immunization were off place (22%), not aware (20%) and sick child (20%). Major source of vaccination was PHC (53%). Growth mapping was seen in 68% of card.

**Conclusion:** In spite of good coverage (>80%), dropout rate was high (>10%). Relevant steps should be taken to improve

vaccine utilization as well as documentation in card.

**Key words:** Immunization status, Immunization card, Vaccine, children dropout.

#### **Introduction:**

Immunization is one of the well-known and most effective method of preventing childhood diseases<sup>(1,2)</sup> With the implementation of Universal Immunization Programme (UIP), significant achievements have been made in preventing and controlling the Vaccine Preventable Diseases (VPDs) namely Tuberculosis, Diphtheria, Tetanus, Pertussis, Polio and Measles.<sup>3</sup> Immunization has to be sustained as a high priority to further reduce the incidence of all VPDs, control measles, eliminate tetanus and eradicate poliomyelitis.<sup>4,5,6</sup>

India has one of the largest Universal Immunization Program (UIP) in the world in terms of quantities of vaccines used, number of beneficiaries (27 million infants and 30.2 million pregnant women) covered, geographical spread and manpower involved.<sup>2,7,8</sup> India spends more than Rs. 2000 crores every year in immunization program to immunize children against VPDs including polio eradication programme.<sup>7,9</sup> Immunizations services are provided through vast health care infrastructure which primarily include primary health centers and sub-centers. Planning for routine immunization is a continuous process of analyzing data, evaluating progress and constraints and making decisions about reaching programme objectives.<sup>1</sup>

The recent NFHS-3 data of India and Gujarat state shows that the coverage of fully immunized children is around 15-18% less than the same in urban area.<sup>(10)</sup> In

India majority population is in rural area, so keeping these points in mind, the current study was planned in rural Ahmedabad district with the following objectives:

- 1) To assess immunization status among children of 12-23 months age group.
- 2) To find out reasons of left out / dropout.
- 3) To check quality of records in immunization card.

### **Materials and Methods:**

Out of total 43 PHCs in rural Ahmedabad, 2 PHCs were selected from one block of Ahmedabad district. Using the purposive sampling method, a cross sectional community based study was conducted in nine villages of seven sub centers of these PHCs. Data was collected during October-November 2011. An effort was made to collect data for maximum number of children during the available time period and 120 children were included. Performa was prepared on the basis of government immunization card having information regarding birth weight, date of birth, gender of baby, birth registration, growth chart and their vaccination status. Details of source of vaccination and reasons for partial immunization / non immunization were also included in Performa. As the Performa was specially prepared for the study, field testing was done and necessary modifications were applied to make it standardized and uniform. Information was assessed primarily from immunization card. If card was unavailable, Information was gathered by directly asking the mothers / guardians after their informed verbal consent. Analysis of study was done by using appropriate statistical software applying suitable statistical tests.

### **Results:**

Out of 120 children card was available for 100 (83%) children. Among these 89 (74%) had government card (Mamta card / Bal-mamta card), while 11 (9%) had private card / file. Looking into

gender distribution, there were 63 (52.5%) male and 57 (47.5%) female children. Regarding birth date status, 94 out of 120 (78%) children had its documentation in their card. Efforts were carried out to know exact date of birth by directly asking the parents and in other 19 (16%) children's date of birth were noted. Documentation of birth weight was available for 62 (52%) of children, while 44 (37%) children's details were recorded from their mothers. Birth weight detail was not found in 14 (11%) of children. Majority, 73 (69%) of children had birth weight > 2.5 kg, 30 children (28%) had weight between 2 to 2.5 kg and 3 children (3%) had birth weight <2 kg. Regarding birth registration details, 27 (22.5%) children were having documentation in card, for 67 (56%) children details were taken from their mothers / guardians whereas birth registration of 26 (21.5%) children were not done.

The vaccine-wise coverage is shown in Table-1. Out of 120 children, 118 (98%) had taken BCG vaccine. Out of these children, BCG scar was seen in 90 (91.2%) out of 98 children present at the time of field survey. All 120 children had received DPT<sub>1</sub> & OPV<sub>1</sub> vaccines. But DPT<sub>3</sub> & OPV<sub>3</sub> vaccines were taken in 96 children (80%). Measles vaccine with 1<sup>st</sup> dose of vitamin A was given to 101 children. Vaccine dropout of DPT<sub>1-3</sub> & OPV<sub>1-3</sub> was highest i.e. 20% followed by BCG-DPT<sub>3</sub> (18.6%) & DPT<sub>1</sub>-measles (16%). Looking at the data of intensified pulse polio immunization programme (IPPIP), 13 children (11%) had not taken any OPV dose in IPPIP rounds. One OPV dose in IPPIP was received by 38 (32%) of children while remaining (69, 57%) had received at least 2 doses of OPV during IPPIP.

The immunization status of these 120 children shows that 89 (74%) children were fully immunized and 31 (26%) were partially immunized. No single unimmunized child was found. There were multiple reasons found for partial

immunization. The most common reasons were off place (22%), not known (20%) and sick child (20%). Other reasons were too far (12%), fear of vaccination (12%), no faith (9.5%) and no time (5%). Major source of vaccination was PHC (53%)

followed by field Mamta session at anganwadi/subcenter (23%). Other sources were government hospitals (17%) and private hospitals / clinics (7%). Out of 89 government cards, growth chart

**Table 1: Gender wise vaccination coverage and dropout rates among study subjects**

Vaccination coverage	Boys		Girls		Total		Chi-square	P value
	n=63	%	n=57	%	n=120	%		
BCG	62	98.4	56	98.2	118	98.3	0.005	0.9
DPT <sub>1</sub>	63	100	57	100	120	100	—	—
DPT <sub>2</sub>	63	100	51	89.5	114	95	4.9	<b>0.026</b>
DPT <sub>3</sub>	54	85.7	42	73.7	96	80	2.7	0.1
OPV <sub>1</sub>	63	100	57	100	120	100	—	—
OPV <sub>2</sub>	63	100	51	89.5	114	95	4.9	<b>0.026</b>
OPV <sub>3</sub>	54	85.7	42	73.7	96	80	2.7	0.1
Measles	55	87.3	46	80.7	101	84.2	0.98	0.3
Fully immunized	48	76.2	41	71.9	89	74.1	0.28	0.59
Partially immunized	15	23.8	16	28.1	31	25.8		(>0.05)
Dropout rates (%)	Boys		Girls		Total		Chi-square	P value
BCG-DPT <sub>3</sub>	12.9		25		18.6		4.7	<b>0.03</b>
BCG-Measles	11.3		17.8		14		2.0	0.16
DPT <sub>1</sub> -DPT <sub>3</sub>	14.5		26.3		20		3.7	0.054
OPV <sub>1</sub> -OPV <sub>3</sub>	14.5		26.3		20		3.7	0.054
DPT <sub>1</sub> -Measles	12.7		19.2		16		1.3	0.25

**Table 2: Comparison of vaccine coverage among study subjects with NFHS-3 & DLHS-3**

Vaccination status (%)	Present study	DLHS3		NFHS3	
	2011-2012	2007-08		2005-06	
	Ahmedabad (Rural)	Ahmedabad (Rural)	Ahmedabad (Total)	Gujarat (Rural)	Gujarat (Total)
Fully immunized	74.16	80.3	50.2	40.1	45.2
BCG	98.3	94	94.9	84.7	86.4
DPT-3 doses	80	58.3	56.4	58.4	61.4
OPV-3 doses	80	83.4	70.2	61.9	65.3
Measles	84.2	76.7	77.4	61.4	65.7

mapping was done in only 61 (68.5%) government cards.

The result of the survey was compared with the latest District Level Health Survey (DLHS-3) & National Family Health Survey (NFHS-3) (Table-2). The data was also compared with total District findings as well as rural component of the District. For comparison with National surveys, the state total as well as rural components of the state was considered.

### **Discussion:**

Immunization card is one of the important tools for assessing immunization status and as a documentary record. In this study out of 120 children card was available for 100 (83%) children, among them 74% was government and 9% was private card. This shows that majority of health services in rural area is delivered through government setup. The gender difference observed in the study (63 boys & 57 girls) is statistically insignificant. The gender wise distribution of the sample population (63 boys & 57 girls) with sex ratio of 904, also explains its representativeness to the study population as the sex ratio of Ahmedabad district is 903 (Census 2011). From the results of general information, it is clear that the documentation was average for date of birth (78%). However, documentation was poor for birth weight (52%) and birth registration (22.5%) which shows that proper documentation requires higher compliance by the health workers. From the result of birth weight, it was found that out of 106 children who had birth weight details, 33 (31%) children were low birth weight (<2.5 kg).

Quality of BCG vaccination was also satisfactory as the BCG scar was found in around 91.2% of children who were available during field survey. Study reveals that vaccine access was good because all the children had taken first dose of DPT & OPV. But vaccine utilization still needs to be improved

because only 96/120 children (80%) received DPT<sub>3</sub> & OPV<sub>3</sub>. Measles coverage has improved upto 84%. The coverage of measles was found to be even higher than DPT<sub>3</sub>. Possible reasons for this include poor tracking, late vaccinations, refusal by parents for further doses of DPT due to fever/local reactions, ignorance by workers to check for DPT doses when infant is brought for measles at 9 months or not updating the card while the vaccination is actually carried out. Vaccine dropout of DPT<sub>1-3</sub> was 20%, which was highest followed by BCG-DPT<sub>3</sub> (18.6%) & DPT<sub>1</sub>-measles (16%). Study reveals that all dropout rates were higher than the 10% cutoff.<sup>1</sup> These highlights higher need for preparing complete due lists' and following it during field sessions along with higher and effective use of E-mamta. If we see the intensified pulse polio immunization programme (IPPIP) status, 13 children (11%) had not received any OPV dose in IPPIP round. Awareness regarding the pulse polio immunization should be strengthened by health workers in community for polio eradication. Regarding the immunization status, 89 children (74%) were fully immunized and 31 children (26%) were partially immunized. Although the fully immunization rate was higher among boys than girls, the gender difference was statistically not significant. (P= 0.59). Lower coverage and higher dropout rates for girls' highlights the gender differences in utilization of services not only in curative services but also in preventive services like vaccination. Most common reasons for partial immunization were off place (22%), not known (20%) and sick child (20%). To improve immunization status, proper IEC particularly strengthening the interpersonal communication skill of the workers regarding vaccination needs to be emphasized. The result of source of vaccination emphasizes the importance and role of government health facilities in service delivery particularly in rural area.

Growth or road to health chart is very important tool for monitoring the growth and nutritional status of baby.<sup>2</sup> Poor growth charting (68.5%) highlights the importance of proper growth charting by the health workers for early identification of malnourished children.

### **Conclusions & recommendations:**

The documentation of various records including birth date, birth weight, registration and growth charting is poor and needs strengthening. Vaccination coverage shows good access to services (coverage >80%) but at the same time reflects poor utilization (dropout rate >10%). Health workers need to be sensitized to follow programmatic guidelines (IEC, tracking, documentation, delivery of key messages etc.) for improvement in performance.

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