

# Assessment of Immunization Coverage in Urban Slums of Delhi

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## ABSTRACT

**Background:** The study was carried out to assess the extent of immunization coverage and the factors affecting them in 12-23 months of children in Delhi. **Methods:** A cross sectional study was done on 210 children's aged between 12-23 month in the urban slums of South Delhi using WHO 30 cluster sampling technique in March 2009. Out of 210 children 47% were male and 53% female. **Results:** Percentage of fully, partially and non-immunized children were 47.1%, 48.6% and 4% respectively. Coverage rate for vaccines were BCG (83%), DPT (80%), OPV (80%), HBV (73%), Measles(54%), Vit A(51%). The factors contributed to the none and partial immunization was delivery conducted by un-trained person, per capita income of the family, education status of parents, awareness about the time and place of immunization and fear of side effect. **Conclusion:** A sustained and dedicated efforts needs to be made each time a child visits for immunization to inform and educate the mother about future immunization schedule, time and place by the ASHA, Anganwadi and other Health care workers along with IEC activities through different media tools.

**Keywords:** Immunization Coverage, Young children, child health.

## INTRODUCTION

Young children all over the world and particularly in developing countries have been victims of excessive morbidity and mortality due to under nutrition, diarrheal diseases, respiratory infections and other communicable diseases. Evidences are available which suggests that full course of immunization against major vaccine preventable diseases can contribute remarkable gains in child health. Immunization is one of the most cost-effective interventions for disease prevention. In May 1974, the World Health Organization (WHO) officially launched a global immunization programme known as Expanded Programme of Immunization (EPI) to protect all the children of the world against six vaccine preventable diseases by the year 2000 (Yadav et al, 2006). EPI launched in India in January 1978 was re-designated as Universal Immunization Programme (UIP) since 1985 and has been able to avert many deaths because of the six childhood diseases. It aims at completing the primary immunization (BCG, DPT3, OPV3, and Measles) for all the children in the country by the time children become one year old.<sup>[1]</sup> The National Family Health Surveys have also, reported that the proportion of fully vaccinated children between 12-23 months of age had increased from 36% in first survey (1992) to

42% in second and 63% in third survey (2005).<sup>[2-4]</sup> But these figures vary widely across regions, states and strata's of the society depending upon socio-economic factors and availability of health care.<sup>[5-12]</sup> Though the coverage has increased since NFHS 2 and DLHS 2 but still it is not satisfactory we are still very far behind of achieving 100% immunization coverage. Increasing urbanization has resulted in a faster growth of slum population. This has led to varying degrees of health burden on the slum children. Urban slums constitute one of the high-risk areas for the vaccine preventable diseases.<sup>[13,14]</sup> Child health conditions in slums with inadequate services are worse in comparison to urban population of same area. The present study was carried out to assess the status of Immunization and to analyze the associated factors in urban slums of Delhi.

## MATERIALS AND METHODS

A cross sectional study was done on 210 children's aged between 12-23 month in the urban slums of South Delhi from March 2009 to May 2009 using WHO 30 cluster sampling technique. Informants, preferably mothers were interviewed using a pre-coded and pre-tested questionnaire by a house-to-house visit. Information regarding the age, education, occupation and income of the parents; the socio-economic status of the family, vaccination status of the child was recorded. The informants were enquired about the immunization card or other health records. If available, immunization status was noted. If the card was not available, immunization status was ascertained by enquiring about vaccines

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received. To validate immunization histories taken by recall method, informants were asked about the time and source of the immunization, the health provider and the health care facility. The presence of BCG scar was also noted. The criteria used for full, partial and non-immunization was:

**Full immunization:** Child 12-23 months of age, who has received three doses of DPT, OPV and Hep B and one dose of BCG, Measles and Vit A each.

**Partial Immunization:** Child who missed any one or more of the mentioned above.

**No immunization:** Child who did not receive even a single dose of vaccine.

Data was analyzed using SPSS Package. Analysis of association between immunization coverage and various socio-demographic variables was done using Chi square test. Logistic regression was performed to assess the independent effect of each variable.

## RESULTS

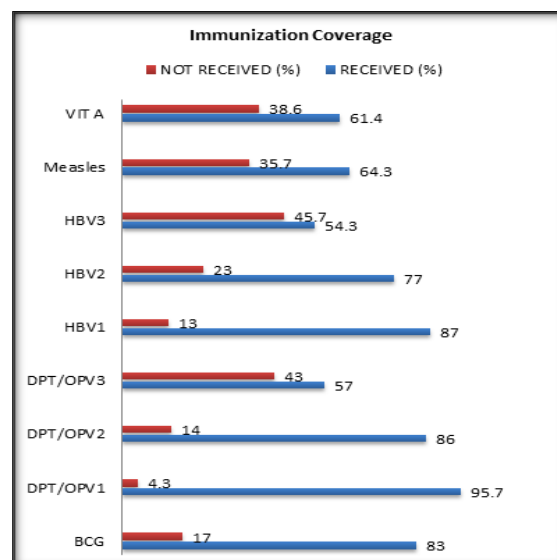
Out of 210 children's randomly selected for the study 99 was male and 111 were female. About half of the mothers were illiterate (23%), 77% were educated up to Intermediate or more. Majority (87%) of the fathers were educated up to Intermediate while 13% were illiterate. Almost half (52.8%) of the fathers were unskilled workers, 20% were skilled workers while 8% were clerks or shop owners. Immunization card was available only with 52.9 % of respondents.

**Table 1: Immunization coverage of the vaccines**

Vaccines	Received (%)	Not Received (%)
BCG	83	17
DPT/OPV1	95.7	4.3
DPT/OPV2	86	14
DPT/OPV3	57	43
HBV1	87	13
HBV2	77	23
HBV3	54.3	45.7
Measles	64.3	35.7
VIT A	61.4	38.6

**Table 2: Association of different factors with the immunization status of the child.**

Variables	Complete immunization		Partial		Total
<b>Sex of baby</b>					
Male	57	(57.6)	42	(42.2)	99
Female	42	(37.8)	69	(62.2)	111
<b>Place of delivery</b>					
Institutional	72	(54.5)	60	(45.5)	132
Home	27	(34.6)	51	(65.4)	78
<b>Mother's literacy status</b>					
Illiterate	18	(37.5)	30	(62.5)	48
Upto middle	45	(36.5)	78	(63.5)	123
High school & above	36	(92.4)	3	(7.6)	39
<b>Father's literacy status</b>					
Illiterate	3	(11)	24	(89)	27
Upto middle	45	(44.1)	57	(55.9)	102
High school & above	51	(63)	30	(37)	81
<b>Delivery conducted by</b>					
Doctor/Trained person	75	(54.3)	63	(45.7)	138
Untrained person	24	(33.3)	48	(66.7)	72
<b>Information about Time and place of Immunization</b>					
Yes	96	(55.2)	78	(44.8)	174



Percentage of fully immunized, partially immunized and non-immunized were 47%,49%,4% respectively being more for males than females children's (57% and 42 %) which is lower than the national average of 63% (NFHS 3). Coverage rate for vaccines were BCG (83%), DPT (80%), OPV (80%), HBV (73%), Measles (54%), Vit A(51%).Coverage of measles vaccine was lower in comparison to Delhi state measles coverage of 78.2 %(NFHS3). Coverage with BCG was maximum and lowest for Vit A. There was a declining trend from DPT 1, OPV 1 and HBV 1 to DPT 3, OPV 3 and HBV 3 immunization, this shows that parents loose motivation as the time passes by. Availability of Hep B vaccines at some Immunization centers was also a concerned which results its lower coverage.

No	3	(8.3)	33	(91.7)	36
<b>Father's occupation</b>					
Unskilled	36	(34.3)	69	(65.7)	105
Bussiness/service/skilled	63	(64)	36	(36)	99
<b>Awareness about need of Immunization</b>					
Yes	93	(50.8)	90	(49.2)	183
No	6	(22.2)	21	(77.8)	27

Figures in parentheses denote percentages.

[Table 2] shows the association between various socio- demographic factors and immunization coverage. Coverage was better for those who were delivered in the institute and by trained health personnel (63 %) in comparison to those who were delivered at home by un trained dais (37%). Higher literacy rate of parents was associated with better immunization coverage ( $p<0.01$ ). The immunization coverage was higher (83%) in children whose mother were aware about the time, place and need of immunization in comparison to those mother who were not (17%). Fear of side effects was a contributing factor for partial immunization.

Long waiting period, and rude behavior of the health worker and business of parents showed no significant relationship with the immunization coverage.

## DISCUSSION

In the present study it was found that 92.23% children's received one dose and 56.47% received 3 doses of DPT/OPV/HBV, with a drop rate of 39% which is higher than the national level of 22.5%. Whereas Tanu J et al reported 26 % and Mehra et al reported only 16% drop rate from DPT 1 to DPT 3. In another study by Malini K,V P Reddaiah, Shashikant in the urban slums of Delhi found that immunization coverage was 69.3%, 15.7% and 15% for of fully, partially and non-immunized children and the reason came for partial immunization were parents lack of information about place, schedule and age for immunization .Almost similar results were shown by Anita Khokhar et al in another study in the slums of Delhi and the main reason for partial immunization was that parents were unaware about the schedule of immunization .In individual studies done by Pragati Chabra et al and Vikas Bhatia et al at Chandigarh found that the coverage is decreasing from 1st to 3rd dose along with measles vaccine. This alarms us to be more aggressive and focused to educate mother about the future Immunization schedule, time and place whenever they come for the immunization.

The study showed a positive relationship with parents education and per capita income of the family with immunization status of the child. Similar findings were found in by V K oorah (2004), Buor. D (2003), Desai S et al 1998 in their studies. The coverage was higher in the childrens who were born in the health institute and by a trained person. Similar results were shown by S

Trivedi, C Mundada, R Chudasama in there study. It shows that delivery in hospital or at home by trained personnel exposes mothers to health personnel who educate them about immunization, which leads to better coverage. One important finding contributing to partial immunization was fear of side effect like pain and swelling at Injection site, hence it is the responsibility of every health worker involved in the immunization to provide adequate information on side effects of vaccine and should tell how to manage them at home and when and where to approach if any emergency arises.

## CONCLUSION

There is lack of adequate information regarding vaccination preventable diseases in the community so focus should be on IEC activities using different tools of media to sensitize the population taking care of their social beliefs. A sustained and dedicated efforts needs to be made each time a child visits for immunization to inform and educate the mother about future immunization schedule, time and place. Anganwadi worker, ASHA and other health care workers should create awareness about the importance of vaccination and long-term benefits in terms of health outcomes among the community and mobilize parents for complete Immunization and institution deliveries.

### Suggestions:

- Cross-sectorial participation will increase vaccination rates in children at high risk in slums like MCD, Women and child development dept., Ministry of education etc.
- Strengthening of the system and practice changes could make it more effective like availability of vaccines and trained health care staff.
- Sustained high level political support, advocacy, and supervision across sectors.
- Districts should strengthen staff capacity to list household beneficiaries including both manual and electronic/mobile systems, add additional vaccination sites, and invest in the transportation required for both
- Better communication and counseling skills tailored to local beliefs will help to deal with barriers to seeking vaccinations.
- Districts and primary care facilities work must more effectively with non-health stakeholders by involving them early in logistics planning, communication, and messaging strategies

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