



Assessment of Immunization Status of Children Between 12-59 Months in Jamnagar District

KEYWORDS

Immunization status, children, dropout rate

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ABSTRACT Background: Immunization is one of most cost effective public health intervention.

Aims: (1) Assess immunization status among children of 12-59 months (2) Find out dropout rate (3) Check association of socio-demographic factors with immunization status.

Method: A cross sectional study of sample 400 children aged between 12 to 59 months was done using multistage sampling technique from Jamnagar district. Immunization of child was assessed through house-to-house survey with the help of immunization card, presence of BCG scar & interview.

Results & Conclusion: 49% of children were fully immunized. In last 4-5 yrs fully immunized children has increased drastically but at the same time reflects incomplete utilization (dropout rate is around 10.78%). Fully immunized children were more in rural religion compared to urban religion indicating good utilization of services in rural areas. However, neither socioeconomic class nor education of mother had association with immunization status.

INTRODUCTION:

Immunization is one of most cost effective public health intervention¹. 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 Measles². Immunization has to be sustained as a high priority to further reduce the incidence of all VPDs, control measles, eliminate tetanus and eradicate poliomyelitis. 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 involved².

AIM AND OBJECTIVES:

(1) To assess immunization status among children of 12-59 months age group (2) To find out left out/dropout rate (3) To check association of socio demographic factors with immunization status.

MATERIAL AND METHODOLOGY:

Study type: A cross sectional study.

Study period: Study was conducted in July 2013 to June 2014

Sample size: According to DLHS-3 (2007-2008) prevalence of fully immunized children in study district was 55.1% and so, on applying sampling formula³,

Sample size $n = (1.96)^2 pq / L^2$

where p=prevalence of fully immunized children

$q = 100 - p = 44.9\%$

$L = \text{allowable error} = 10\% \text{ of } p = 5.51$

Sample size came to $n = 313$. Taking the non-response rate of 10% of $n = 313$, sample size came to $n = 345$. For feasibility reasons $n = 400$ was taken.

Data collection:

Total 10 areas (each having 40 study participants) were selected from whole district (total 400 participants). Out of 10 areas, 3 areas were selected from urban and 7 from rural region (as urban : rural population ratio is 3:7 in India). From each area, 40 children between 1-5 yrs were selected by house-to-house survey. For selection of urban areas, we had selected 3 wards by simple random sampling out of total 19 urban wards. 7 rural areas were selected in the following way. There were 7 blocks in whole district. From each block, one PHC was selected by simple random sampling. From each PHC, one sub centre was selected by simple random sampling. These 7 sub centre areas were considered as rural areas. Pretested semi-structured proforma was used. First of all, information was given orally about study to respondent of each participant (child of 1-5yr) and if she/he would give consent, questions were asked to him/her as mentioned in proforma. Immunization coverage of each child was assessed through checking of immunization card, presence of BCG scar. If immunization card was not available then information was sought from the mother of that child.

The study protocol was reviewed and approved by The Institutional Ethical Committee of the our institution.

Following criteria for full immunization, partial immunization & no immunization of children between of 12-59 months were used:

Fully immunized: Child 12-59 months of age who received BCG, 3 doses of DPT, 3 doses of OPV, 3 doses of Hepatitis B & Measles before 1 year of age⁴.

Partial immunized: Child, who missed any one or more of above doses

Not immunized: Child who did not receive even a single dose of vaccine

Dropout rate was calculated as per standard formula.

RESULTS:

TABLE-1: COVERAGE OF DIFFERENT VACCINES WITH GENDERWISE DISTRIBUTION

Vaccines	Male(n=180)		Female(n=220)		Total(n=400)	
	No	%	No	%	No	%
BCG	179	99.44	220	100	399	99.75
DPT1	178	98.89	218	99.10	396	99
DPT2	174	96.67	215	97.73	389	97.25
DPT3	174	96.67	215	97.73	389	97.25
OPV0	169	93.89	201	91.36	370	92.5
OPV1	172	95.56	210	95.45	382	95.5
OPV2	169	93.89	208	94.55	377	94.25
OPV3	168	93.33	208	94.55	376	94
HepB1	112	62.22	140	63.64	252	63
HepB2	104	57.78	134	60.91	238	59.5
HepB3	103	57.22	132	60	235	58.75
Measles	155	86.11	201	91.37	356	89
Fully Immunized*	85	47.22	111	50.45	196	49

*Not a Single child was unimmunized

As shown in table-1, out of total 400 children, 399 (99.75%) had taken BCG vaccine and 370 (92.5%) had taken OPV0 dose at birth. Similarly OPV1, OPV2 and OPV3 had taken by 382 (95.5%), 377 (94.25%) and 376 (94%) respectively. Out of total 400, DPT1, DPT2 and DPT3 had been taken by 396 (99%), 389 (97.25%) and 389(97.25%) respectively. HepB1, HepB2, HepB3 had been taken by 252 (63%), 238(59.5%), 235 (58.75%) respectively. Out of total 400 children 356(89%) had taken measles vaccine. It was seen from table – 1 that only 49% (196) children were fully immunized. More female children were fully immunized i.e. 50.45% (111) as compared to male children i.e.47.22% (85).

TABLE-2: DROPOUT RATE FOR VARIOUS VACCINES

Drop Out Rate	Boys	Girls	Total
BCG-Measles	13.36	8.63	10.78
BCG-DPT3	2.79	2.27	2.51
DPT1-DPT3	2.24	1.38	1.80
DPT1-Measles	12.92	7.8	10.10
Hep1-Hep3	8.04	5.72	6.75

It was seen from table-2 that Vaccine dropout of BCG-Measles was highest i.e.10.78%, followed by DPT1-measles i.e. 10.10%. For BCG-DPT3 it was 2.51%, DPT1-DPT3 it was 1.80% and for HEP1-HEP3 it was 6.75. It was also observed that dropout rate was somewhat higher in Male child as compared to female child.

TABLE-3: ASSOCIATION OF VARIOUS DEMOGRAPHIC FACTORS WITH IMMUNIZATION STATUS

Demographic Factor	Fully Immunization status		Chi square value	P value
	Yes	No		
Sex of the child			0.295	0.5872
Male	85 (47.22%)	95(52.78%)		
Female	111(50.45%)	109(49.75%)		
Locality			25.862	0.0001
Urban	35(29.17%)	85(70.83%)		
Rural	161(57.5%)	119(42.5%)		
Socioeconomic class*			1.814	0.4037
Upper	3(37.5%)	5(62.5%)		
Middle	73(53.28%)	64(46.71%)		
Lower	120(47.06%)	135(52.94%)		
Age Group			16.518	0.0009
1-2 yr	91(59.09%)	63(40.91%)		
2-3 yr	55(51.89%)	51(48.11%)		
3-4 yr	26(35.62%)	47(64.38%)		
4-5 yr	24(35.82%)	43(64.18%)		
Education of Mother			1.903	0.7535
Illiterate	33(50%)	33(50%)		
Primary	91(46.19%)	106(53.81%)		
Secondary	57(53.77%)	49(46.23%)		
Higher Secondary	8(53.33%)	7(46.67%)		
≥Graduate	7(43.75%)	9(56.25%)		

* Upper class includes class1, middle includes class2,3 & lower includes class 4,5 of modified Prasad classification (Average AICPI of yr 2012=969)

From table 3 it was seen that fully immunized status was higher among female children as compare to male children. This difference was not found statistically significant. Similarly, fully immunized children were more in rural religion compared to urban religion and this difference was highly significant statistically ($\chi^2=25.862$, $df=1$, $p=0.0001$). However, there was no association between socioeconomic class and immunization status of child. Similarly education of the mother had no association with immunization status. Important finding found from the study is that in the last 4-5 yrs the percentage of fully immunized child has increased drastically from 35.82% to 59.09% which is highly significant statistically. ($\chi^2=16.518$, $df=3$, $p=0.0009$).

DISCUSSION:

In our study we found that 49% children were fully immunized. A study conducted by Govani⁵ et al, showed that 74.1% children were fully immunized which was higher than our study. Similar study conducted by Masood⁶ et al, showed coverage of fully immunized children was 72%, which was also higher than our findings. National statistics (NFHS III) reflects fully immunized children as 45.2% in Gujarat state which is lower than our study. DLHS-3 statistics of Jamnagar district showed fully immunization coverage was 55.1% which was higher than our study. Reason is that in DLHS-3 they used previous definition of fully immunized (BCG, 3 doses of OPV, 3 doses of DPT, Measles) and major left our and/or drop out is seen for hepatitis vaccine which is responsible for this difference in findings. Our study showed that fully immunized status was higher

among female children as compare to male children. This difference was not found to be statistically significant. Sharma⁷ et al, in their study showed the proportion of fully immunized children was higher in females (27.3%) than in males (23.4%), However the difference was statistically not significant.

Our study denoted Vaccine dropout of BCG-Measles was highest i.e. 10.78% while Govani⁵ et al showed the same was 14% which is slight higher than our findings. Dropout rate of DPT1-measles was i.e. 10.10% in our study which was lower as compared Govani⁵ et al, i.e.16% Dropout rate for HEP1-HEP3 was 6.75% in our study. Dropout rate for BCG-DPT3 & DPT1-DPT3 were 2.51% & 1.80% respectively & the values for the same rate were 18.6% & 20% respectively in study by Govani⁵ et al. It was also observed that all the dropout rates mentioned above were somewhat higher in male child as compared to female child that contrasts with the results of Govani⁵ et al.

However, there was no association between educations of mother with immunization status of child. Similarly socioeconomic class had no association with immunization status. In the last 4-5 yrs the percentage of fully immunized child has increased drastically from 35.82% to 59.09% which is highly significant statistically.

CONCLUSION:

Vaccination coverage shows drastic improvement from in last 4-5 yrs from 35.82% to 59.09% but at the same time reflects poor utilization (dropout rate is around 11%). Fully immunized children were more in rural religion compared to urban religion which reflects better utilization of immunization services in rural than urban areas. There was no significant association of either sex of the child or education of the mother or socioeconomic class with immunization status.

REFERENCE

1. Ministry of Health & Family Welfare, Government of India. (2009). Immunization Handbook for Medical officers(Revised Edition). New Delhi.p.15 | 2. Handbook for Vaccine & Cold Chain Handlers.2010. Department of Health & Family Welfare, Ministry of Health and Family Welfare, Government of India; p. 2 | 3. Lwanga S.K. and Lemeshow S. 1991. Sample size determination in health studies. Geneva: WHO, a practical manual. | 4. Ministry of Health & Family Welfare, Government of India. (2009). Immunization Handbook for Medical officers(Revised Edition). New Delhi.p.7 | 5. Govani K J, Sheth J K, Bala D V. (2013). Immunization Status of 12-23 months Children in Rural Ahmedabad. Healthline. 4(1):38-42 | 6. Masood A, Dwivedi A, Singh G, Hassan M A, Singh A. (2011). Assessment of immunization status of children between 12-23 months in Allahabad district. National Journal of Community Medicine. 2(3):346-8 | 7. Sharma R, Desai VK, Kavishvar A. (2009). Assessment of immunization status in slums of Surat by 15 clusters multi indicators cluster survey technique. Indian J Community Med. 34:152-4 |