

# Assessment of immunization coverage among under 5 year children in an urban field practice area, Rajapur

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## Abstract

**Introduction:** Immunization forms the major focus of child survival programs throughout the world. Recent estimates suggest that approximately 34 million children are not completely immunized with almost 98% of them residing in developing countries. A national socio-demographic goal was set up in the National Population Policy 2000 to achieve universal immunization of children against all vaccine preventable diseases of the childhood by 2010. **Aims and Objectives:** To assess the immunization coverage and also to determine the various socio-demographic variables in an urban Health centre Rajapur. **Materials and Methods:** A total of 478 Children under 5 years of age were included. A house to house visit was made in the study area, the nature, purpose and objectives of the study were explained to the Informant (Mother) of the child chosen for the study. The data was collected by interviewing the Informant (Mother) of the child using a pre-designed and pre tested proforma. Information was collected regarding demographic, socioeconomic, Immunization history. **Results:** Out of 478 children, 248(51.88%) were boys and 230(48.12%) were girls. Most of the children, 315(65.9%) belonged to grade 4 SES. Vaccination coverage for OPV-0 and BCG was 98.54%, 95.57% for OPV-1 and DPT-1, 94.54% for OPV-2 and DPT-2, 93.30% for OPV-3 and DPT-3, 73.4% for OPV and DPT 1<sup>st</sup> Booster and 57.14% for DPT 2<sup>nd</sup> Booster. Measles 1<sup>st</sup> dose coverage was 89.87% and 62.21% for measles Booster. 450 (95.34%) did not had any adverse events whereas 22(4.66%) developed some adverse events. **Conclusion:** Immunization card is one of the important tools for assessing immunization status. Further improvement should focus on improving the coverage for DPT2/OPV2 and DPT3/OPV3 and also for measles.

**Keywords:** Immunization, Children, Vaccine, Urban.

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## INTRODUCTION

The World Health Organization (WHO) launched the Expanded Program on Immunization (EPI) in 1974 globally with focus on prevention of the six childhood vaccine-preventable diseases by the year 2000. This was endorsed by the Government of India in 1978<sup>1</sup>. Immunization forms the major focus of child survival

programs throughout the world. Roughly 3 million children die each year of vaccine preventable diseases (VPDs) with a disproportionate number of these children residing in developing countries<sup>2</sup>. Recent estimates suggest that approximately 34 million children are not completely immunized with almost 98 % of them residing in developing countries<sup>3</sup>. Vaccination coverage in India is also far from complete despite the long-standing commitment to universal coverage. While gains in coverage proved to be rapid throughout the 1980s, taking off from a below 20% coverage to about 60% coverage for some VPDs, subsequent gains have been limited<sup>4</sup>. Immunization is often cited as being one of the greatest public health achievements of 20<sup>th</sup> century, but effective immunization requires population coverage levels of 90 to 95% depending upon the vaccine-preventable disease<sup>5</sup>. In India 43.5% of children between 12-23 months were fully immunized (BCG 78%, three dose of polio 78.2%, three dose of DPT 55.3% and 58.8% of children received

measles vaccine) (DLHS3 and NFHS3). UNICEF Survey of 2009 indicated 61% of children fully immunized, coverage for BCG 86.9%, DPT 3<sup>rd</sup> dose 71.5%, OPV 3<sup>rd</sup> dose 70.4% and measles 74.1%. Thus the coverage levels of primary immunization need to be improved through well planned strategy<sup>6</sup>. Further, a national socio-demographic goal was set up in the National Population Policy 2000 to achieve universal immunization of children against all vaccine- preventable diseases of the childhood by 2010<sup>7</sup>. Even if national immunization coverage levels are sufficiently high to block disease transmission, pockets of susceptibility may act as potential reservoirs of infection. It is therefore essential to know if under-vaccination is a problem in specific population group, which involves determining inequalities in coverage level. Thus, the present cross-sectional study was undertaken to assess the immunization coverage and various socio-demographic factors affecting the same in an Urban Community Health center, Rajapur.

## AIMS AND OBJECTIVES

1. To assess the immunization coverage in an urban Health centre Rajapur.
2. To determine the various socio-demographic variables affecting the same.

## MATERIALS AND METHODS

### Sources of data

The present study was carried out in the areas of urban health training centre Rajapur attached to the Department of Community Medicine, MR Medical College, Gulbarga. Rajapur is 2 km away from the college. It is a designated urban field practice area of Department of Community Medicine, MR Medical College. It has a population of 4650. The parental institute had adopted Rajapur to provide preventive, promotive and curative services. The services of CHTC, Rajapur include General and Pediatric OPD, antenatal and postnatal care services and services for under five children including Immunization.

**Study Period:** The study was conducted from June 2015 to July 2015

**Study Design:** A Cross sectional study.

### Inclusion Criteria

1. All the children less than 5 years who were residing in Rajapur.
2. Who should be residing for more than 6 months

### Exclusion Criteria

1. Children of age less than 5 years residing in selected clusters for less than 6 months.
2. Those are not willing to participate in the study.
3. Those where in the informant is not mother and also were not having the Immunization card all together.

## Sample size

A total of 478 Children under 5 years of age were included.

## Methodology and Data Collection

All the Children under 5 years of age and who were residing for more than 6 months in CHTC Rajapur area were included in the study without taking any representative sample. A house to house visit was made in the study area, the nature, purpose and objectives of the study were explained to the Informant (Mother) of the child chosen for the study. The data was collected by interviewing the Informant (Mother) of the child using a pre-designed and pre tested proforma during house to house visit. Information was collected regarding demographic, socioeconomic, Immunization history etc. as per the proforma. Proof of Immunization The child was considered as immunized or not, based on the immunization card. For those without an immunization card, only information from the mother that the child has been immunized was considered. The lack of immunization cards was a common problem in few of the cases but a shorter period of recall of child immunization by the mother reduced this problem. If the mother could not remember regarding the vaccination or in the presence of any other confounding factors, the child was considered as not immunized with the vaccine under consideration. Repeated visits were done up to 3 times for those who were not available at the time of the visit. Socio-economic status was assessed according to Modified Kuppaswamy classification for urban area<sup>8,9</sup>.

## Statistical Analysis

Data thus generated was analyzed by using SPSS software and simple proportions and percentages were calculated and statistical tests of significance were applied where ever necessary. P value less than 0.05 were considered statistically significant.

## RESULTS

In our study majority of children 114 (23.85%) were below 1yr, followed by 103 (21.55%) of 1-2yrs, 93 (19.46%) 3-4yrs, 87 (18.2%) 2-3yrs and 81 (16.95%) of 4-5yrs. Out of 478 children, 248 (51.88%) were boys and 230 (48.12%) were girls. Majority of children i.e. 23.85% (M-23.39%, F-24.35%) were below 1yr, followed by 21.55% (M-21.37%, F-21.74%) of 1-2yrs, 19.46% (M-19.35%, F-19.57%) 3-4yrs, 18.2% (M-18.55%, F-17.83%) 2-3yrs and 16.95% (M-17.34%, F-16.52%) of 4-5yrs. 467 (97.7%) were Hindu, followed by 07(1.46%) Muslim and 04 (.84%) Christian. Most of the children, 315(65.9%) belonged to grade 4 SES, 129(26.99%) to grade 3, 29(6.07) to grade 5, 05(1.05%) to grade 2 and none to grade 1 SES according to Modified Kuppaswamy classification for urban area. In our study majority of

mothers 151 (31.59%) are illiterate, followed by 96(20.08%) completed primary or middle school education, 92(19.25%) high school, 87(18.2%) graduate or post graduate and 52(10.88%) PUC or Diploma education. 387(80.96%) of mothers were unemployed. 421(88.08%) had immunization card present and 57(11.92%) did not have immunization card at the time of the visit. Out of 478 Eligible Subjects 06 were not vaccinated. Vaccination coverage for OPV-0 and BCG was 98.54%, 95.57% for OPV-1 and DPT-1, 94.54% for OPV-2 and DPT-2, 93.30% for OPV-3 and DPT-3, 73.4% for OPV and DPT 1<sup>st</sup> Booster and 57.14% for DPT 2<sup>nd</sup> Booster.93.68% for Hepatitis B-1, 92.66% for Hepatitis B-2 and 89.18% for Hepatitis B-3. Measles 1<sup>st</sup> dose coverage was 89.87% and 62.21% for measles Booster. 78.44% had Vitamin A 1<sup>st</sup> Dose and only 34.28% for Vitamin A 2<sup>nd</sup> Dose. 450 (95.34%) did not had any adverse events whereas 22(4.66%) developed some adverse events.

**Table 1:** Age and sex wise Distribution of the study subjects

Age -Wise	Sex				Total	
	Males		Females		No	%
	No	%	No	%		
0-1 Years	58	23.39	56	24.35	114	23.85
1-2 Years	53	21.37	50	21.74	103	21.55
2-3 Years	46	18.55	41	17.83	87	18.20
3-4 Years	48	19.35	45	19.57	93	19.46
4-5 Years	43	17.34	38	16.52	81	16.95
<b>Total</b>	<b>248</b>	<b>100.00</b>	<b>230</b>	<b>100.00</b>	<b>478</b>	<b>100.00</b>

$\chi^2=0.14$ ,  $df=4$ ,  $p=0.99$

**Table 2:** Distribution of the study subjects based on their Religion

Religion	No	%
Hindu	467	97.70
Muslim	07	01.46
Christian	04	00.84
<b>Total</b>	<b>478</b>	<b>100</b>

**Table 3:** Distribution of the study subjects based on their SES

SES	No	%
Grade 1	00	00
Grade 2	05	1.05
Grade 3	129	26.99
Grade 4	315	65.90
Grade 5	29	06.07
<b>Total</b>	<b>478</b>	<b>100</b>

**Table 4:** Distribution of the study subjects based on their Mothers Educational status

Education of the Mother	No	%
Illiterate	151	31.59
Primary/Middle School	96	20.08
High School	92	19.25
PUC / Diploma	52	10.88
Graduate/Post Graduate	87	18.20
<b>Total</b>	<b>478</b>	<b>100</b>

**Table 5:** Distribution of the study subjects based on their Mothers Educational status

Occupation of the Mother	No	%
Unemployed	387	80.96
Unskilled	17	03.56
Semi-skilled	38	07.95
Skilled	09	01.88
Semi-Profession/ Profession	27	05.65
<b>Total</b>	<b>478</b>	<b>100</b>

**Table 6:** Distribution of the study subjects based on the presence of Immunization Card

Immunization Card	No	%
Present	421	88.08
Absent	57	11.92
<b>Total</b>	<b>478</b>	<b>100.00</b>

**Table 7:** Distribution of the study subjects based on Vaccine Coverage

Vaccines	No of Eligible Subjects	Not Vaccinated	Percentage of Vaccine Coverage
OPV-0 and BCG	478	07	98.54
OPV-1 and DPT-1	474	21	95.57
OPV-2 and DPT-2	458	25	94.54
OPV-3 and DPT-3	448	66	93.30
OPV and DPT 1 <sup>st</sup> Booster	297	79	73.40
DPT 2 <sup>nd</sup> Booster	28	12	57.14
Measles	385	39	89.87
Measles Booster	299	113	62.21
Hep-B-1	475	30	93.68
Hep-B-2	463	34	92.66
Hep-B-3	453	49	89.18
Vitamin A 1 <sup>st</sup> Dose	385	83	78.44
Vitamin A 2 <sup>nd</sup> Dose	353	232	34.28
No Vaccination	478	06	1.26

**Table 8:** Distribution of the study subjects based Adverse events following vaccination

Adverse Events	No	%
Yes	22	04.66
No	450	95.34
<b>Total</b>	<b>472</b>	<b>100</b>

## DISCUSSION

The present study was conducted during the period of June and July 2015. Study findings showed higher immunization coverage as compared to NFHS-3 data. The overall coverage for different vaccines ranges from 98.54% for BCG vaccine to 89.87% for measles, which was above the 85% target set by Universal Programme of Immunization (UIP) in India. In our study Out of 478 children, 248 (51.88%) were boys and 230 (48.12%) were girls. 467 (97.7%) of the studied population were Hindu, followed by 07 (1.46%) Muslim and 04(.84%) Christian. Most of the children, 315(65.9%) belonged to grade 4 SES, 129(26.99%) to grade 3, 29(6.07) to grade 5, 05(1.05%) to grade 2 and none to grade 1 SES according to Modified Kuppuswamy classification for urban area. A study done by Chaturvedi R *et al*<sup>10</sup> showed that 51.43% were males and 48.57% were females. Majority of the study subjects were Hindus (86.70%) while 13.30% were Muslim. A total of 79% study subjects belonged to social class IV followed by social class III (12.9%) and social class V (8.1%). No study subjects belonged to class I and II. The findings of our study showed that Vaccination coverage for OPV-0 and BCG was 98.54%, 95.57% for OPV-1 and DPT-1, 94.54% for OPV-2 and DPT-2, 93.30% for OPV-3 and DPT-3, 73.4% for OPV and DPT 1<sup>st</sup> Booster and 57.14% for DPT 2<sup>nd</sup> Booster.93.68% for Hepatitis B-1, 92.66% for Hepatitis B-2 and 89.18% for Hepatitis B-3. Measles 1<sup>st</sup> dose coverage was 89.87% and 62.21% for measles Booster. 78.44% had Vitamin A 1<sup>st</sup> Dose and only 34.28% for Vitamin A 2<sup>nd</sup> Dose. Similar results were found by Yadav *et al*<sup>11</sup> in an urban slum of Jamnagar where coverage of BCG was maximum (94.75%) followed by OPV (84.7%) and DPT (81.4%) and that of measles was (75.7%). Similarly a study done by Varsha C *et al*<sup>12</sup> found that coverage was highest for BCG (92.86%) and lowest for measles (62.38%). Coverage for DPT3 and OPV3 was the same (65.72%). A consistent decline in coverage rate from the first to third dose was observed in DPT and OPV. A study done by Surendra Kumar *et al*<sup>6</sup> which found the coverage was highest for BCG (96.67%) and lowest for OPV-3 (82.86%) for DPT3 and measles it was 83.33% and 84.29% respectively. Whereas a study done by Vijay Kumar *et al*<sup>13</sup> showed higher vaccine coverage than our present study, (99.1%) children had received and (0.9%) child had not taken BCG. All the children had taken first dose of DPT and OPV. Second dose of DPT and OPV was taken by (97.3%) of children and the third dose of DPT and OPV was taken by (83.0%) children. the dropout rate from DPT2/OPV2 to DPT3/OPV3 was more than that from DPT1/OPV1 to DPT2/OPV2. Measles vaccine was taken by 88.4% of children. In our study majority of mothers 151 (31.59%) are illiterate and

387(80.96%) of mothers were unemployed. Where as a study done by Ray S S *et al*<sup>14</sup> showed that nearly 43% of mothers were illiterate and nearly 77% were unemployed. 421(88.08%) had immunization card present and 57(11.92%) did not have immunization card at the time of the visit. A study done by Chhabra *et al*<sup>15</sup> showed that about 68% had their immunization card present.

## CONCLUSION

Immunization card is one of the important tools for assessing immunization status. Coverage of immunization in this immunization centre was found to be relatively better mainly due to constant motivation by the Staff and health workers of Community medicine Department along with weekly house to house motivation of the cases who are due for vaccination by the students and Interns. Further improvement should focus on improving the coverage for DPT2/OPV2 and DPT3/OPV3 and also for measles.

## REFERENCES

1. Bhola Nath, JV Singh, Shally Awasthi, Vidya Bhushan, Vishwajeet Kumar, SK Singh. A study on determinants of immunization coverage among 12-23 months old children in urban slums of Lucknow district, India. Indian Journal of Medical Sciences 2007; 61(11):598-606.[PubMed]
2. Bonu, S. Rani, M. Baker, T.D. "The impact of the national polio immunization campaign on levels and equity in immunization coverage: Evidence from rural North India". Social Science Medicine, 2003; 57:1807-19.[ScienceDirect]
3. Das, N. Mishra, V. Saha, P. "Does Community Access Affect the Use of Health and family Welfare Services in Rural India?" National Family Health Survey Subject Reports. Indian Institute of Population Sciences, Mumbai India. 2001 May
4. Frenkel, L.D. Nielsen, K. "Immunization issues for the 21st century. Ann Allergy Asthma Immunology, 2003; 90(6):45-52.[PubMed]
5. Bhuwan Sharma, Hemant Mahajan and G. D. Velhal. Immunization Coverage: Role of Socio demographic Variables Advances in Preventive Medicine 2013.[Weblink]
6. Surendra Kumar Painkra A, Nirmal Verma B, Dhiraj Bhawnani C, G.P. Soni D. Assessment of Immunization coverage and its Determinants in urban slums of Raipur city, Chhattisgarh. National Journal of Medical and Dental Research, July-September 2014;2(4):20-26.[Weblink]
7. Vijay Kumar, Vidya Sagar, Shilpa Karir, Mithilesh Kumar. Immunization status among children between 12-23 months of age attending immunization centre at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. International J. of Healthcare and Biomedical Research, April 2015; 3(3):61-68.[PDF]
8. Kuppuswamy B. Manual of socioeconomic status (Urban), Manasayan, Delhi, 1981.[PDF]

9. D. Mishra, H.P. Singh. Kuppuswamys socioeconomic status scale- A revision. *Indian J Pediatrics* 2003; 70(3): 273-274.[[MedIND](#)]
10. Chaturvedi R, Sharma RP, Martolia DS, Nigam S, Varma P, Midha T. Evaluation of Primary Immunization Coverage in an Industrial City of Uttar Pradesh. *Online J Health and Allied Sciences*, 2015; 14(2):2. [[Weblink](#)]
11. S. Yadav, S. Mangal, N. Padhiyar, J. P. Mehta, and B. S. Yadav, "Evaluation of immunization coverage in urban slums of Jamnagar city," *Indian Journal of Community Medicine*,2006;31(4).[[PDF](#)]
12. Varsha chaudhary, Rajeev Kumar, V.K. Agarwal, H.S. Joshi, Mahender Sharma. Evaluation of Primary immunization coverage in an urban area of Bareilly city using Cluster Sampling Technique. *NJIRM* 2010; Vol. 1(4):10-15.[[ScopeMed](#)]
13. Vijay Kumar, Vidya Sagar, Shilpa Karir, Mithilesh Kumar. Immunization status among children between 12-23 months of age attending immunization centre at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. *International Journal of Healthcare and Biomedical Research*, April 2015; 3(3):61-68.[[Weblink](#)]
14. Ray SS, Patra L, Giri AK. Coverage evaluation of primary immunization and the associated determinants in an urban slum of Eastern India. *IJRRMS* 2013; 3(2):35-37.[[PDF](#)]
15. Pragati Chhabra, Parvathy Nair, Anita Gupta Meenakshi Sandhir and A.T. Kannan. A study on Immunization in Urbanised Village in Delhi. *Indian Journal of pediatric* 2007; 74(2):131-134.[[MedIND](#)]

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