

VACCINATION COVERAGE IN URBAN SLUMS OF RAIPUR CITY

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Abstract: To study vaccination coverage in 0-5 year. Age group in urban slums of Raipur city.

Methods: Retrospective, cross-sectional observational study of 407 children of 0-5 yr. age group in various slums of Raipur city.

Period of study: 1 year (September 2010-September 2011)

Results: In 0 to 5 year age group BCG vaccination coverage was 98%, DPT1, OPV1 – 96.1%; DPT2, OPV2-94.4%; DPT3,OPV3- 78.8%; measles 89%; DPT and OPV booster 40% and DT coverage was 3.9%; First dose of oral vitamin A was given to 48.3% subjects, 52% were fully immunized and 48% was partially immunized.

Conclusions: In urban slums of Raipur city vaccination coverage in 0-5 year. age group falls sharply as age of child progresses.

Keywords: Urban slums, Raipur city, vaccination coverage.

I. INTRODUCTION

Urbanization is rapidly spreading throughout the developing world resulting in changing proportion of urban to rural population. In 1988 for the first time, the percentage of urban poor surpassed the rural poor [1]. Urban health in slums presents serious public health concerns; predominant among them are neonatal morbidity and mortality. Effective vaccination programme can prevent the newborn and infant from many Vaccine Preventable Diseases and limit the morbidities as well as mortality.

Chhattisgarh is one of the youngest State of the Indian nation constituted on 1st Nov 2000. Total population of the state according to 2001 census is 2.08 crore; of this 80% is rural and 20% is urban. Raipur and Durg account for almost half the total urban population of Chhattisgarh [2].

Methods: This study was conducted over a period of 1 Year at the Aanganwadi Centers of various urban slums of Raipur city. For this purpose 407 children of 0-5 year age group were randomly selected.

Inclusion Criteria: All term neonates, infants and children up to 5 year of age who reside permanently in slums of Raipur city.

Exclusion Criteria: Children >5 year or preterm or sick newborn who needed admission in nursery within 7 days after birth or 0-5 year children of guests and relatives from other places.

Mothers were initially explained the aims and objectives and type of study and they were taken into confidence. With the help of Aangan Wadi Workers (AWWs) mothers were collected twice weekly at the Aangan Wadi Centers (AWC) nearby, where one of the days was weekly vaccination day. Pre-conceived and printed questionnaire was used as proforma and filled by the investigator herself based on Mothers interview and vaccination cards (if presented). Data was collected, tabulated and analyzed statistically. As this is a one-time, single observation study, Confidence Interval (CI) was chosen as the best tool to gather reliable data; narrower the range, more the confidence in the data. The calculation of 95% confidence interval was done by method described by J.E.Park [3].

95% confidence interval (CI): It is the range of 95% confidence in any data.

To calculate CI, SEP (standard error of proportion) is calculated as follows:

$$SEP = \sqrt{pq/n}$$

Where

p= proportion of the parameter for which 95% CI is to be calculated.

q=proportion of the rest of the parameters.

n= sample size.

$$95\% \text{ CI} = SEP \times 1.96 \pm p$$

i.e. $(SEP \times 1.96 \text{ CI}) + p$ to $(SEP \times 1.96 \text{ CI}) - p$

95% CI calculated for every parameter.

TABLE 1:- DISTRIBUTION OF SUBJECTS ACCORDING TO SOCIOECONOMIC STATUS: (MODIFIED PRASAD'S CLASSIFICATION)

Socio Economic Status (SES)	No.	%	(95% CI)
Grade 1	0	0	
Grade 2	0	0	
Grade 3	109	26.78	(CI 0.22-0.30)
Grade 4	255	62.65	(CI 0.58-0.67)
Grade 5	41	10.07	(CI 0.07-0.13)
Grade 6	02	0.49	(CI 0.002-0.012)
Total	407	100	

Majority of the selected subjects lie in GRADE 4 SES i.e. 62.65% (95% CI- 0.58-0.67)

TABLE 2:- DISTRIBUTION ACCORDING TO STATUS OF VACCINATION

Vaccine	No.	%	95% CI
BCG	399	98	(0.96-0.99)
DPT & OPV 1 st	391	96.1	(0.94-0.97)
DPT & OPV 2 nd	384	94.4	(0.91-0.96)
DPT & OPV 3 rd	321	78.8	(0.75-0.82)
Measles	362	89	(0.85-0.92)
Vitamin A –First dose	197	48.3	(0.43-0.52)
DPT & OPV booster	163	40	(0.35-0.44)
DT	016	3.9	(0.02-0.06)
No vaccination	0	0	
Total	407	100	

Status of vaccination revealed that maximum 98% were vaccinated with BCG (95% CI- 0.96- 0.99).

II. RESULTS

In this study maximum 62.65% (95% CI 0.58-0.67) of subjects belong to families with grade 4 socioeconomic status, followed by Grade3 -26.78% (95% CI 0.22-0.30), Grade5-10.07% (95% CI 0.07-0.13) and Grade6-0.49% (95% CI 0.002-0.012); according to modified Prasad classification.

98% were given BCG (95% CI- 0.96-0.99), 96.1% subjects were vaccinated with DPT & OPV 1 (95% CI- 0.94-0.97), 94.4% with DPT & OPV 2 (95% CI- 0.91-0.96), 78.8% with DPT & OPV 3 (95% CI- 0.75-0.82), 89% were given Measles vaccine (95% CI-0.85-0.95), 48.3% were given 1st dose of Vitamin A (95% CI – 0.43-0.52).

DPT and OPV booster was given to 40% (95% CI-0.35-0.44), only 3.9% were vaccinated with DT (95% CI-0.02-0.06), while no child was completely unvaccinated.

III. DISCUSSION

As most of the subjects belonged to lower SES. Families almost entirely rely on Aangan Wadi Centres for vaccination of their children.

BCG vaccination coverage was 98%, DPT1 OPV1 96.1%, DPT2 OPV2 94.4%, DPT3 OPV3 78.8%, measles 89% and OPV booster 40% and DT coverage was 3.9%. Oral Vitamin A was given to 48.3% subjects. 52% were fully immunized and 48% were partially immunized.

The main limitation of this study is mothers failure to recall the different vaccinations separately; especially if more than one vaccine was given at a time or more than one child was vaccinated at the same time. Sometimes they purposely lie about the child being vaccinated while in reality the child had missed that particular vaccination for some reason .Only few could present the Vaccination card and when presented ,most of them were incompletely filled and so, not reliable.

Malini Kar, et al[4] (2001) in the study found that 69.3% slum children of South Delhi were fully immunized, which is more than this study. 15.7% were partially immunized and 15.1% were not immunized. Vitamin A coverage was found to be 75.9% which is more than this study.

B.K. Swain and S. Mishra [5](2006) in the study found that Vitamin A coverage was 12.5% in urban slums of Orissa, which is less than this study.

Punith K. et al [6](2008) in the study found that BCG coverage was 97.72%, DPT 92.2% and Measles 88.63% in an urban area of Bangalore city. These findings are similar to this study.

V.K.Desai et al [7](2008) in the study found that BCG coverage was 75.1%, DPT3 48.6%, OPV3 47.9%, Measles 40% and oral Vitamin A 28.9%. 25.1% were completely immunized, 51.7 % were partially immunized and 23.1% were not immunized in the slums of Surat city. These findings are less than this study.

D.K.Taneja et al [8](2010) in the study of Delhi JJ clusters found that 44.6% were fully immunized which is similar to this study.

District Level Household and Facilities Survey-3 Chhattisgarh (DLHS-3 C.G.)[9](2007- 2008) states that in 12- 23month age group 71.4% children were fully immunized which is more than this study, 96.8% received BCG vaccination which is similar to our study. 3 doses of DPT were received by 80.1%, 3 doses of OPV were received by 78.3%, measles vaccination was received by 84.4%, which is similar to this study and 71.4% received oral Vitamin A dose which is more than this study.

DLHS-3 Raipur [9] (2007- 2008) states that in 12- 23month age group 53.7% children were fully immunized which is similar to this study.

IV. CONCLUSION

We conclude that mothers' lack of information is the major cause of incomplete vaccination in this category; it includes lack of knowledge about place, schedule and eligible age of vaccination. Major obstacles were timing of vaccination clashing with busy hour of household works, illness of child, opposition by in-laws; lack of motivation was mainly due to uncertainty regarding benefits of vaccination. Mothers have to be sensitized about not only getting their newborns vaccinated but keep them motivated to complete the vaccination schedule. Policies should be made especially to improve and sustain the vaccination coverage in urban slums. AWWs must be sensitized to properly fill the vaccination cards. Regular audits must be carried out to stop the practise of false reporting of vaccination by the AWWs.

Our findings are similar to DLHS3 Raipur as far as vaccination is concerned. Our study lags behind in oral Vitamin A 1st dose, which may be due to decreased coverage of measles vaccine, lack of awareness and poor health care delivery system in urban slums.

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What Is Already Known?

Network of Aangan Wadi Centres (AWC) are present in almost all of the urban slums of Raipur City

What This Study Adds?

Poor vaccination coverage by the AWC in urban slums and also that vaccination coverage falls sharply as the age progresses from newborn to infant.

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