

Mother and Child Service Coverage: Reproductive and Child Health Programme in Alwar District, Rajasthan state.

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ABSTRACT

Present study was conducted to assess the child immunization coverage and availability of safe motherhood intervention services for expecting mothers under RCH programme in Alwar district. WHO-30 cluster sampling method was used and 26 rural and 4 urban clusters were surveyed. Fully immunized children were more in urban areas (82.1%) as compared to rural (45.1%) areas. The immunization coverage was more or less similar in both sexes. BCG and Measles coverage was also higher i.e. 89.3% and 85.7% in urban areas than 69.6% and 52.2% in rural respectively. High drop out rate was found for DPT (25.3%) and OPV (23.2%) in rural areas as compare to urban (7.7% each). Failure of immunization in rural areas was mainly due to unawareness of need for immunization (35.4%), mother too busy in 16.8%, place and time not known in 9.7%, place for immunization too far 8.8% and 7.1% each for unaware of need to return for subsequent doses, fear of side reactions and vaccinator absent. TT immunization coverage was mainly through Government source and two third of the mothers were immunized in both urban and rural areas. 71.4% of urban and 36.1% of the rural mothers received ANC ≥ 3 . However the iron folic acid supplementation was similar in urban and rural areas. Place of delivery was mainly hospital in urban areas (71.4%) and were home (61.7%) in rural areas. Hospital staff (Govt. or pvt.) conducted 82.1% of the deliveries in urban areas as compared to 58.5% in rural. The ANM/ Health staff (56.4%) and family members (27.0%) were main source of information for mother for the need of mother and child immunization.

Key words : VPDs; RCH programme; Alwar district; Urban; Rural

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INTRODUCTION

Delivering effective and safe vaccines through an efficient delivery system is one of the most cost effective public health interventions. Immunization programmes aim to reduce morbidity and mortality due to vaccine preventable diseases (VPDs). Following the successful global eradication of smallpox in 1975 through effective vaccination programmes and strengthened surveillance, the Expanded Programme on Immunization (EPI) was launched in India in 1978 to control other VPDs. Initially, six diseases were selected: diphtheria, pertussis, tetanus, poliomyelitis, typhoid and childhood tuberculosis. The aim was to cover 80% of all infants. Subsequently, the programme was universalized and renamed as Universal Immunization Programme (UIP) in 1985. Measles vaccine was included in the programme and typhoid vaccine was discontinued. The UIP was introduced in a phased manner from 1985 to cover all districts in the country by 1990, targeting all infants with the primary immunization schedule and all pregnant women with Tetanus Toxoid immunization. In 1992, the UIP became a part of the Child Survival and Safe Motherhood Programme (CSSM), and in 1997, it became an important component of the Reproductive and Child Health Programme (RCH)¹.

The UIP envisages achieving and sustaining universal immunization coverage in infants with three doses of DPT and OPV and one dose each of measles vaccine and BCG, and, in

pregnant women, with two primary doses or one booster dose of TT. The UIP also requires a reliable cold chain system for storing and transporting vaccines, and attaining self-sufficiency in the production of all required vaccines¹.

Present immunization programme of the country is two decade old but yet to deliver the desirable reduction in childhood morbidity and mortality due to vaccine preventable diseases, which wholly depends on the full immunization (BCG, three DPT and OPV, measles and one/ two dosages of TT to pregnant women). This study was aimed towards evaluating child immunization and antenatal service component of RCH programme in rural as well as urban areas of the district.

MATERIAL AND METHODS

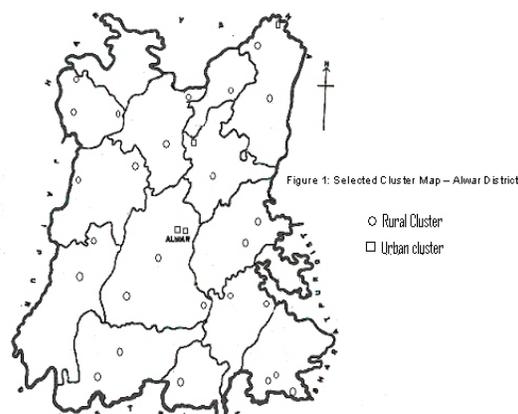
Appraisal of mother and child service coverage under RCH programme was carried out in rural and urban areas of the Alwar district, Rajasthan state from 21.10.2005 to 30.10.2005. WHO 30 cluster sampling technique was used and clusters were drawn while considering the villages and urban wards census 2001 population. Total Alwar district population was 29,92,592. The sampling interval was 99,753 and selected random number was 62,000. From these selected 26 rural and 4 urban clusters, 7 children of age group 12-23 months and 7 mothers of 0 to 11 months children in each cluster were surveyed. A total of 210 children (12-23 months) and 210 mothers of 0-11 months children were to be surveyed from selected clusters. Pre survey training of all the participating workers was

conducted and standard child coverage, reasons for coverage failure and mother coverage forms were discussed in length. The pilot survey was carried out in one village and an urban ward.

Collection of Data from Selected Clusters

Spot mapping of selected clusters was carried out so as to survey two near by clusters in a day (Figure 1). Approximate distance of each cluster was also mentioned from the district head quarter so as to keep adequate provision of time for travelling and survey. In the present study the travelling time was in the range from 30 minutes for nearest Alwar Urban cluster to 4 hours 30 minutes for farthest rural cluster Doroli, Laxmangarh tehsil. For house to house survey provision of 2hours time was kept. For covering all the clusters a stipulated time of 5 days was given with provision of extra two working days. Three teams were constituted including one each of senior field staff and paramedical staff under supervision of Medical Officer/ Epidemiologist. Field survey was done on house-to-house visit basis and first house was selected by specific random technique and subsequent houses were selected by going to next nearest house.

Before the commencement of interview, the purpose of the visit was explained to the family head, mother or other responsible member of the family. Information was collected by asking either from mother or caretaker of children of 12-23 month's age. In case of non-availability of mother, caretaker or no other responsible person who can



answer questions and a mother/infant immunization card then that household was skipped and no entry was made on the form. Interview about vaccination dates were confirmed from immunization cards, registers, or by verbal history from mother or caretaker. Mother of infants (0-11months) were interviewed and asked for immunization card for recording TT doses given, antenatal care taken, place of delivery and the person attended the delivery.

House-to-house visits were made until seven mothers of children of 0 to 11 months age and seven children of 12 to 23 months of age group were found. Total number of children (12-23 months) and mothers (0-11 months child) had exceeded to 210 as in last house more than one child (12-23 months) or mother (0-11 months child) were found during coverage survey.

For immunization status, the right age for vaccination was considered as: for BCG, any time after birth; polio/DPT-first dose, any time after 6 weeks of birth, subsequent doses were spaced at least one month apart, and measles, soon after 9 months completed. A fully immunized child was one who had received

BCG(1),DPT(3), OPV(3),and Measles(1), partially immunized; some doses of vaccine were administered but immunization was not completed and a not immunized child was one who had not received even a single dose of any vaccine. For partially and not immunized child the most important reasons of immunization failure were recorded. A child immunized at the wrong age was considered not immunized.

Child age was ensured before filling up mother coverage form. Immunization card or any other record of immunization was asked from mother. Date of I, II/ booster dose of TT with source were recorded. For recording all the immunization coverage exact date of immunization was noted and for un-immunized "O" was placed. If mother had received ANC visits 3 or more was marked yes and Iron and folic acid tablet 100 or more during pregnancy was labelled as +. Place of delivery was noted and who had attended the delivery was also recorded. Source of information for mother for availability of various services

for her child and self were recorded.

RESULTS

During the coverage evaluation, 26 rural and 4 urban clusters were surveyed. For survey of required number of children (12-23 months) and mothers of infants (0-11 months) on an average 49 houses were visited. The average duration of interview was 1 hour and 41 minutes (Table1).

Fully immunized children were 82.1% in urban areas and almost half (45.1%) in rural areas. Partially immunized children were 39.7% in rural areas and 10.7% in urban. Percent children not immunized were more than double (15.2%) in rural areas as compared (7.1%) in urban. Immunization against Measles; 52.2% received in rural areas whereas, in urban areas 85.7% children received the same. Coverage of BCG was 69.6% in rural areas and 89.3% in urban. Dropout rates in rural areas for OPV I to OPV III was 23.2% and for DPT I to DPT III; 25.3% that is three times more than urban areas of 7.7% each (Table 2).

Table 1 : Survey Information, Alwar District, Rajasthan (21-30.9.2005)

Survey Information	Rural	Urban	Total
Population	2557653	434939	2992592
Number of cluster surveyed	26	4	30
Number of households surveyed	1205	278	1483
Average number of households visited per cluster	46	69	49
Average time taken per cluster (minutes)	101	104	101
Number of children surveyed (12-23 months)	184	28	212
Number of mothers of infants (0-11months) surveyed	183	28	211

Table 2 : Vaccination Coverage in Children (12 -23 Months) in Alwar District

Type of Vaccine/ Dose	Rural (184)	%	Urban (28)	%	Total (212)	%
Immunization Card	45	24.5	14	50.0	59	27.8
DPT I	146	79.3	26	92.9	172	81.1
DPT II	136	73.9	24	85.7	160	75.5
DPT III	109	59.2	24	85.7	133	62.7
OPV I	142	77.2	26	92.9	168	79.2
OPV II	135	73.4	24	85.7	159	75.0
OPV III	109	59.2	24	85.7	133	62.7
BCG	128	69.6	25	89.3	153	72.2
Scar Present	98/128	76.6	18	72.0	116	75.81
No Scar	30/128	23.4	7	28.0	37	24.2
Measles	96	52.2	24	85.7	120	56.6
Dropout Rate						
DPT I TO III	37	25.3	2	7.7	39	22.7
OPV I TO III	33	23.2	2	7.7	35	20.8
Fully Immunized*	83	45.1	23	82.1	106	50.0
Partially Immunized	73	39.7	3	10.7	76	35.8
Not Immunized	28	15.2	2	7.1	30	14.2
* $\chi^2=12.87$; $P<.001$						
Coverage by Sex	Male(126)	%	Female (86)	%		
Fully Immunized	61	48.4	45	52.3*		
Partially Immunized	51	40.5	25	29.1		
Not Immunized	14	11.1	16	18.6		
Dropout Rate	DPT I to DPT III		OPV I to OPV III			
Rural	25.30%		23.20%			
Urban	7.70%		7.70%			
Total	22.70%		20.80%			

Main reasons for failure of immunization were people's unawareness for immunization need (35.6%), mothers busy in other works (16.9%) and place of immunization too far (9.3%) (Table 3).

Table 3: Reasons for Failure of Immunization in Children (12-23 Months)-Alwar District, Rajasthan

Reasons	Rural		Urban		Total	
	No	%	No	%	No	%
1. Lack of Information.						
Unaware of Need for Immunization	40	35.4	2	40.0	42	35.6
Unaware of need to return for subsequent doses	8	7.1	0	0	8	6.8
Fear of side reactions	8	7.1	0	0	8	6.8
Place and time not known	11	9.7	0	0	11	9.3
Subtotal	67	59.3	2	40.0	69	58.5
2. Lack of Motivation						
Postponed till another time	0	0	0	0	0	0
No Faith in Immunization	0	0	0	0	0	0
Subtotal	0	0	0	0	0	0
3. Obstacles						
Time of Immunization						
Inconvenient	3	2.7	0	0	3	2.5
Vaccine not available	2	1.8	0	0	2	1.7
Mother too busy	19	16.8	1	20.0	20	16.9
Child ill not brought	1	0.9	1	20.0	2	1.7
Child ill brought but not immunized	0	0	0	0	0	0
Place too far	10	8.8	1	20.0	11	9.3
Vaccinator absent	8	7.1	0	0	8	6.8
Mother ill and family problem	2	1.8	0	0	2	1.7
Out of station	1	0.9	0	0	1	0.8
Measles attack	0	0	0	0	0	0
Others	0	0	0	0	0	
Subtotal	46	40.7	3	60.0	49	41.5
Total	113	100.0	5	100.0	118	100.0

Table 4: Profile of Mother of infants Coverage in Alwar District, Rajasthan

Characteristics	Rural	N=183	Urban	N=28	Total	N=211
	No	%	No	%	No	%
1. Immunization						
Immunization card	68	37.2	9	32.1	77	36.5
TT1	117	63.9	24	85.7	141	66.8
TT2 / Booster	161	88.0	25	89.3	186	88.2
Government source	156	85.2	22	78.6	178	84.4
2. Antenatal care						
Mother given ANC (>=3 Visits)*	66	36.1	20	71.4	86	40.8
IFA tablets (>=100 tablets)**	56	30.6	8	28.6	64	30.3
3. Place of Delivery						
Hospital***	70	38.3	20	71.4	90	42.7
Home	113	61.7	8	28.6	121	57.3
4. Delivery Conducted by						
Hospital staff						
(Govt.or Pvt.)****	107	58.5	23	82.1	130	61.6
Trained Dai	12	6.6	0	0	12	5.7
Untrained Dai	64	35.0	5	17.9	69	32.7
*X ² =12.78; P<.001, ** X ² =.059; P>.10 ***X ² =11.12; P<.001,**** X ² =5.85; P<.05						

Table 5 : Source of Information to Mother for RCH services in Alwar District

Source of Information	Rural	N =183	Urban	N = 28	Total	N=211
	No	%	No	%	No	%
ANM/ Health staff	107	58.5	12	42.8	119	56.4
Anganwadi worker	46	25.1	0	0	46	21.8
Family members	41	22.4	16	57.1	57	27.0
Neighbors	20	10.9	0	0	20	9.5
Television	0	0	4	14.3	4	1.9
Self motivation	5	2.7	0	0	5	2.4

Home delivery was common 61.7% in rural areas as compared to 28.6% in urban. Hospital staff had attended 82.1% of urban and 58.5% of rural deliveries. Of the total, 35% of rural and 17.9% of urban deliveries were conducted by untrained Dai (Table 4). Source of information to mothers for immunization need was ANM/ health staff for 58.5% rural and 42.8% urban mothers. In rural areas 25.1% of the mothers reported Anganwadi workers as the source of information. Family members were the source of information for 22.4% and 57.1% in rural and urban areas respectively. Neighbours guided 10.9% of rural mothers, and 14.3% urban mothers got information through television. Self motivation was present in only 2.7% rural mothers (Table 5).

DISCUSSION

In present study, overall percentage of fully immunized children was more or less similar as compared to other studies in the same district/ state and the national vaccine coverage was found in National Family Health survey-2 (NFHS-2) (1998-99)^{2,3,4}. However higher percentage of fully immunized children was reported in other similar type of studies from Chandigarh (72.2%) and West Bengal, Birbhum (53.1%) and Purba Medinipurw (61.6%) districts^{5,6}. Just half of the rural children (45.1%) were fully immunized as compared to urban (82.1%). This difference was found statistically significant ($X^2 = 12.87$; $P < .001$). Similar findings were also reported from same district with low

coverage level i.e. 27.1% for rural and 61.90% for urban areas⁷. Sex wise vaccination coverage was more or less similar i.e. 48.4% for males and 52.3% for females (Table 2).

Overall drop out rates were observed to be 22.7% and 20.8% for DPT I to DPT III and OPV I to OPV III, which were about three time more in rural areas (25.3% and 23.2%) than urban (7.7% each). Similar results of about three times more drop out rates in rural areas (25.6%) than urban (10.1%) were reported by other authors from the same district⁷. Comparative drop outs i.e. 22.7% for DPT I to III and 22.7% for OPV I to III were observed from Birbhum district, West Bengal⁶. However, a lower drop out rate was observed for DPT I to III (16.5%) and OPV I to III (17.4%) from Purba Medinipur district West Bengal⁶.

Important reasons for immunization failure either partially or not immunized were unaware of need for immunization 35.6%, mother too busy 16.9. Place too far and place and time not known were 9.3% each. Unaware of the need to return for subsequent doses were 6.8%. Similar observations were made by other authors^{3,7}. Mother's TT; I and II including booster doses coverage were 66.8% and 88.2% respectively. Most of the mothers 84.4% were vaccinated through Government sources (Table 4). Similar findings were given in a study from the same district and West Bengal^{9,8}.

ANC coverage visits 3 and more were higher in urban pregnant women 71.4% as compared to rural 36.1%. However, the consumption of IFA tablets 100 and more

were not different in rural (30.6%) and urban (28.6%) pregnant women. Similar findings were given in a study from same district in rural areas⁹.

The significantly large number of deliveries occurred in Hospitals (71.4%) in urban areas as compared to only 38.3% in rural areas. In urban areas more than two third deliveries were attended by hospital staff (82.1%) as compared to only 58.5% in rural areas. Source of information for mother for available services under the RCH programme was ANM/ Health staff, family members and neighbors. However in rural areas the anganwadi workers were also the important source.

Comparison with recorded coverage

Much higher coverage was reported by district health authority i.e. 98.5% DPT, 98.5% OPV, 93.6% measles and 101.0% for BCG for the district for the year 2004-05 and Central Bureau of Health Intelligence for the country (2003-04) i.e. 91.0% DPT, 92.3% OPV, 85.5% measles, 100.0% BCG and 77.8% TT (pregnant women)^{10,11}. Fully immunized children were reported 93.64% with a coverage difference of 46.6% from the present study (Table 2)¹⁰.

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