



# Knowledge and Practices of Caretakers About Immunization Among Children Aged 12 – 23 Months of Rural block Gudamalani, District Barmer (Rajasthan)

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## ABSTRACT

**Background:** Immunization done in childhood period almost guarantees protection from many vaccine preventable diseases. It prevents 2 million deaths per year worldwide and is rightly considered to be 'overwhelmingly good' preventive tool by the scientific community. Uptake of vaccination as per national immunization schedule is dependent not only on provision of health services but also on other factors including knowledge and attitude of mothers.

### Objectives:

1. To determine immunization coverage of infants according to EPI.
2. To access the knowledge of caretakers of infants aged 12 – 23 months regarding immunization.

**Materials and Methods:** It was a cross-sectional study conducted from October 2016 to December 2016, included 210 caretakers and 210 infants of 12-23 months old selected by applying the 30 × 7 cluster sampling method in block **Gudamalani** of district Barmer. Only one infant was included from each caretaker.

**Results:** Out of total 210 subjects, 111 (52.85%) were males and rest 99 (47.15%) females. BCG was administered to 106 (95.49%) of males and 85 (85.85%) of females, DPT III to 83 (74.77%) of males and 70 (70.70%) of females and Measles to 149 (70.96%) of the total subjects. The dropout rates in both the gender was observed maximum in BCG to Measles (23.58 in males and 20.00 in females) followed by DPT – I to DPT – III (16.16 in males to 9.75 in females). Knowledge about the correct age of vaccination for Measles, BCG, DPT, OPV were 26.67%, 21.43%, 18.57% and 12.85% of the study subjects respectively. Fever (54.28%), swelling (74.76%), redness (60.95%) on thigh after DPT emerged as main side effects of vaccination. Measles (86.19%) and Polio (65.24%) were the most commonly heard diseases, among the vaccine preventable diseases.

**Conclusion:** Though the coverage rate for vaccine preventable diseases was good in our study, but still there is a need to increase the immunization coverage among the infants, so that not a single child remains unimmunized. Since the infants are vulnerable to infections towards vaccine preventable diseases (VPDs), it necessitates for collection of the data on the knowledge, and practices of the caretakers with respect to different aspects of immunization.

**Key Words:** Fever, Measles, Vaccine preventable diseases, Side effects

## INTRODUCTION

“The child is a God’s gift to the family. Each child is created in the special image and likeness of God for greater affection, to love and to be loved.”

In the last 50 years, it was observed that immunization has saved the lives of more children than any other medical intervention. Immunization is one of the best indicators to evaluate the health outcomes and services distributed across

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various socio - economic groups to prevent a series of major illnesses. According to the NFHS-3 in India, the percentage of immunization increased from 36.0% in (1992), to 42.0% in (1998) and further to 44.0% in (2005) of the children in age one to two years. But it is still, very less than to the desired goal of achieving 85.0% coverage<sup>(1)</sup>. Immunization practices are particularly much valuable in environment where children are undernourished and die from vaccine preventable diseases. Vaccines are safe, simple and cost-effective ways to save and improve the lives of children. Knowing the extensive benefits of immunization, further any imbalances in knowledge, attitude and practices shall be a cause of serious policy concern. Uptake of vaccination services is dependent on provision of the services as well as on other factors including knowledge and attitude of mothers and density of health workers.

The most important factors influencing the attitudes of caretakers was considered to be the cultural receptivity perceived modernity and education, as well as the trust in health workers.

Immunization is a key strategy to achieve the Millennium Development Goals (MDGs) especially to reduce the under-5 mortality rate (U5MR), infant mortality rate (IMR) and proportion of child immunized against measles.

Ever since the launch of EPI in 1978 & UIP in 1985 with promotion through CSSM program & RCH in 1997, there has been considerable progress in control of vaccine preventable diseases, but in spite of the progress every year a large number of children continue to be affected with VPD's.

It is estimated that every year, at least 27 million children and 40 million pregnant women worldwide do not receive the basic package of immunization (as defined by the WHO and UNICEF), and 2 to 3 million people die from vaccine preventable diseases. Around 10 million children under the age of five years die every year and over 27 million infants in the world do not get the coverage of full routine immunization. In the developing world, it does not only prevent about 3 million child death per year but also has the potential to avert additional 2 million deaths if immunization programmes are expanded and fully implemented<sup>(2)</sup>. The accurate measurement of vaccination coverage is an essential step in determining the expected reductions in morbidity and mortality from VPDs. Although the immunization coverage has increased substantially in the recent years but the children aged 12 - 23 months in urban India; only 60% were fully immunized which is less than the desired goal of achieving 85% coverage. Immunization status varies widely across regions, states, strata's of the society due to socio – demographic factors and availability of health care.

## OBJECTIVES OF THE STUDY

1. To determine immunization coverage of infants according to EPI.
2. To access the knowledge of caretakers of the infants aged 12 – 23 months regarding immunization.

## METHODOLOGY

This is a cross-sectional household based study included 210 caretakers and 210 infants of 12-23 months old selected by applying the 30 × 7 cluster sampling method in block **Gudamalani of Barmer district** with the desired precision of ± 10% and expected coverage of 85% as proposed by WHO<sup>(3)</sup>. House-to-house visits and face-to face interviews were conducted on a pre-tested proforma after taking the consent from the caretakers. Only one caretaker was selected for each infant. Knowledge about vaccine with the site of injection was assessed.

**Complete Immunization** - Child who has received three doses of DPT, Hepatitis B and OPV each, and one dose of BCG and Measles each.

**Partial Immunization** - A child who had missed any one or more of the above doses

**No Immunization** - A child who had not received even a single dose of any vaccine

**Drop Out Rate** – DPT I coverage – DPT III coverage /DPT I coverage ×100

## RESULTS

In total 210 subjects, males were 111 (52.85%) and 99 (47.15%) females. It was observed that 149 (70.96%) infants were completely immunized and 50 (23.80%) had partial immunization while 11 (5.24%) were not immunized with any vaccine. The percentage of males was higher, (72.97%) among fully immunized children whereas female subjects was higher in both partial (24.24%) and non-immunized (7.07%) subjects. (Table 1)

BCG was administered to 191 (90.95%) of the subjects of which 106 (95.49%) were males and 85 (85.85%) females, whereas OPV – 0 dose was administered to 196 (93.33%) subjects. DPT III was administered to 83 (74.77%) of males and 70 (70.70%) of females. Three doses of Hepatitis B were administered to 84 (75.67%) of males and 70 (70.71%) of females. Measles was administered to 81 (72.97%) of males and (68.68%) of females. (Table 2)

The dropout rates in both the gender was observed maximum in BCG to measles (23.58 in males and 20.00 in females) followed by DPT – I to DPT – III was (16.16 in males to 9.75

in females). Further for BCG to DPT it was (6.60 in males and 3.52 in females), for Hepatitis B – III to Measles (3.57 in males and 2.94 in females), and lowest for DPT – III to Measles (2.40 in males to 2.85 in females). (Table 3)

When the knowledge of care-givers regarding the various aspects of routine immunization accessed, it was seen that only 30.95% of care-givers knew that children less than five years of age are the candidates for routine immunization under national immunization schedule (NIS). In this study, 57.61% of caretakers had heard for tuberculosis, 86.19% for polio, 24.28% for diphtheria, 18.57% for pertussis, 31.42% for tetanus, 6.67% for Hepatitis B and 65.24% for measles among the vaccine preventable diseases. Knowledge about the correct age for vaccination was 21.43% for BCG and 26.67% Measles, 18.57% DPT, 5.23% Hepatitis B, and 12.85% for OPV. Among the caretakers, 63.33% had the correct knowledge for three doses of DPT, to be given up to the age of one year. Contra-indications of any vaccines were stated as fever (46.67%), cough and cold (45.24%) and diarrhoea (33.33%). fever (54.28%) and the main side effects of vaccination emerged as swelling (74.76%) redness (60.95%) on thigh after DPT. (Table 4)

## DISCUSSION

The main factors for children not being fully immunized and low coverage of immunization may be the lack of knowledge or awareness about the importance of prevention of VPDs and 'not aware of the needs of vaccination' as well as the inadequacy of community participation. Therefore keeping every factor in mind the present study was carried out with the objectives of assessing the knowledge of routine child immunization among care-givers of 12 to 23 months old children, finding out the coverage of all the vaccines among the recipients.

In the present study, the subjects were 52.85% males and 47.15% females. These results are similar to study by <sup>(4), (5)</sup>. <sup>(6)</sup>(51.9%, 58.6%, 53.8% males, and 48.1%, 41.4%, 46.2% females) respectively.

In our study out of 210 infants, 70.96% were fully immunized while 23.80% partially and only 5.24% were non-immunized. Similar results of 72.23% completely immunized and 4.64% non-immunized, were observed in a study by <sup>(7)</sup> and in another study <sup>(8)</sup>, 73.3% fully immunized and 2.8% non-immunized. In study by <sup>(9), (6)</sup> a very high 95.0% and 86.67% of complete immunization was observed, whereas <sup>(10), (11)</sup> observed 69.3% and 60.8%, and, while, the study <sup>(10)</sup> observed only 44.85% of complete immunization. (Table 1)

We observed 90.95% of infants immunized with the BCG which are comparable to 94.75% by <sup>(8)</sup> 89.1% by <sup>(5)</sup> and 86.5% by <sup>(12)</sup> while higher results (98.75%) were observed by <sup>(6)</sup>. In our

study we observed DPT – I in 86.19% and DPT – II in 78.57% which is comparable with <sup>(12)</sup>(84.2% DPT – I and 82.2% DPT – II. Measles vaccine was administered in our study in 149 (70.96%) which is also comparable to 78.3% by <sup>(12)</sup> whereas study by <sup>(6)</sup> observed high results 87.62%. (Table 2)

The dropout rate for DPT I to DPT III was 16.02 which is quite comparable to a study 18.0 by <sup>(13), (14)</sup> and 15 by <sup>(8)</sup> while dropout rate for DPT I to Measles was 2.40 for males and 2.85 for females, which is much less than the study by <sup>(6)</sup> 4.72% and 8.79% respectively. (Table 3)

To achieve maximum benefit, it is necessary that immunization coverage should uniformly reach to all levels of society for all vaccine preventable diseases. This requires prompt effort on provision of immunization services and optimum utilization of these services by the target population. Mothers of under-five children are the main target as care givers for childhood immunization and so needed to be significantly aware of the services and benefits of immunization. It requires knowledge about the vaccination, the appropriate age of vaccination along with the impact of morbidity and mortality of vaccine preventable diseases with the benefits and utilization of health services.

In our study, 30.95% of the care-givers knew that under-five children were the candidates for routine immunization, similar to 36.0% by <sup>(5)</sup>. Out of 210 study subjects, 78.57% referred two diseases out of all vaccine preventable diseases correctly, similar to <sup>(9)</sup> (83.0%) in <sup>(16)</sup>. 85%. In the present study 57.61% of the subjects, named tuberculosis, 24.28% diphtheria, 18.57% pertussis and 65.24% measles a VPD, similar to study by <sup>(11)</sup> i.e. 52.4% tuberculosis, 23.2% diphtheria, 17.3% pertussis and 61.0% for measles. In our study contra-indication for vaccination indicated by caretakers was 46.67% fever, 45.24% cough and cold and 18.57% diarrhoea, while in a study by <sup>(5)</sup> it was 37.5% fever, 35.2% cough and cold, 24.8% diarrhoea. Study by <sup>(17)</sup> reported 24.0% fever, 41.0% for cold and 14.0% for diarrhoea for contra-indication.

In our study 63.33% care givers had the knowledge of three doses for DPT; similar to 60.0% by <sup>(17)</sup>. (Table 4)

## CONCLUSION

Though the knowledge of the studied mothers about vaccination was not appropriate as reflected by the results of this study for achieving the Millennium Development Goals. It requires for strengthening of the efforts for aggressive campaigning, community involvement with dissemination of information for the success of the universal immunization programme. In this study we had gone through to know the existing levels of knowledge among the mothers and to assess the immunization practices in the areas needed for the

improvement. Therefore it can be said that, IEC activities focused on immunization to be implemented sincerely with dense efforts for better coverage in areas with incomplete immunization.

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**Table 1: Distribution of study subjects according to Immunization status (n = 210)**

Variable	Male(n = 111)		Female(n = 99)		Total(n = 210)	
	No.	%	No.	%	No.	%
Complete Immunization	81	(72.97)	68	(68.68)	149	(70.96)
Partial Immunization	26	(23.42)	24	(24.24)	50	(23.80)
No Immunization	04	(3.60)	07	(07.07)	11	(05.24)
Total	111	(52.85)	99	(47.14)	210	(100)

**Table 2: Distribution of study subjects according to the vaccines given (EPI)**

Vaccine	Male ( n= 111)		Female ( n= 99)		Total (n= 210)	
	No.	%	No.	%	No.	%
BCG	106	(95.49)	85	(85.85)	191	(90.95)
OPV – o	108	(97.29)	88	(88.88)	196	(93.33)
DPT – I	99	(89.18)	82	(82.82)	181	(86.19)
DPT – II	89	(80.18)	76	(76.77)	165	(78.57)
DPT – III	83	(74.77)	70	(70.70)	153	(72.85)
OPV – I	105	(94.59)	83	(83.83)	188	(89.52)
OPV – II	91	(81.98)	77	(77.77)	168	(80.00)
OPV – III	87	(78.37)	72	(72.73)	159	(75.71)
HEP B – I	92	(82.88)	79	(79.80)	171	(81.42)
HEP B – II	87	(78.37)	75	(75.76)	162	(77.14)
HEP B – III	84	(75.67)	70	(70.71)	154	(73.33)
MEASLES	81	(72.97)	68	(68.68)	149	(70.96)

**Table 3: Distribution of study subjects according to dropout rates**

Vaccine	Male	Female
BCG to Measles	23.58	20.00
BCG to DPT – I	6.60	3.52
DPT – I to DPT – III	16.16	9.75
DPT – III to Measles	2.40	2.85
Hep B – III to Measles	3.57	2.94

**Table 4: Distribution of study subjects according to knowledge of caretakers**

Responses	Male (n= 111)		Female (n=99)		Total(n=210)	
	No.	%	No.	%	No.	%
Immunization up to age of Five years	36	(32.43)	29	(29.99)	65	(30.95)
Name of the vaccine preventable diseases heard						
Tuberculosis	67	(60.36)	54	(54.55)	121	(57.61)
Polio	98	(88.29)	83	(83.85)	181	(86.19)
Hepatitis	08	(07.21)	06	(06.06)	14	(06.67)
Diphtheria	27	(24.32)	24	(24.24)	51	(24.28)
Pertussis	21	(18.92)	18	(18.18)	39	(18.57)
Tetanus	36	(32.43)	30	(30.30)	66	(31.42)
Measles	73	(65.77)	64	(64.64)	137	(65.24)
Number of vaccine preventable diseases correctly said						
Two Disease	87	(78.38)	78	(78.79)	165	(78.57)
One Disease	100	(90.09)	77	(77.78)	177	(84.28)
None	19	(17.11)	16	(16.16)	35	(16.67)
Knowledge about correct age of vaccination						
BCG	26	(23.42)	19	(19.20)	45	(21.43)
Polio	16	(14.41)	11	(11.11)	27	(12.85)

Hepatitis	06	(05.40)	05	(05.05)	11	(05.23)
DPT	20	(18.01)	19	(19.20)	39	(18.57)
Measles	32	(28.83)	24	(24.24)	56	(26.67)
Knowledge about doses of Vaccines						
Three doses of Polio	53	(47.75)	38	(38.39)	91	(43.33)
Three doses of Hepatitis	05	(04.50)	04	(04.04)	09	(4.28)
Three doses of DPT	72	(64.86)	61	(61.61)	133	(63.33)
Knowledge about contraindication of vaccination						
Fever	56	(50.45)	42	(42.42)	98	(46.67)
Cough and cold	51	(45.95)	44	(44.44)	95	(45.24)
Diarrhoea	38	(34.23)	32	(32.32)	70	(33.33)
Vomiting	18	(16.21)	07	(07.07)	25	(11.90)
Knowledge about side effects of Vaccination						
Fever	64	(57.66)	50	(50.50)	114	(54.28)
Redness	71	(63.96)	57	(57.58)	128	(60.95)
Swelling	88	(79.28)	69	(69.70)	157	(74.76)
Vomiting	06	(05.40)	04	(04.04)	10	(04.76)

\*multiple responses, total not additive