



# Assessment of Immunization of Under Five Children of Tribal and Non-Tribal Rural Communities in Southern Rajasthan

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## ABSTRACT

**Background:** The impact of immunization has not been uniform across different sections of the society, despite thrust on Expanded Programme of Immunization (EPI) since long back. This study was held to assess the level of knowledge and actual practice of immunization by tribal and non-tribal mothers of under five children in a rural belt of southern Rajasthan.

**Methods:** The study is based on a cross section of sample households representing the two social groups, viz tribal and non-tribal households with atleast one under five children in a rural belt of southern Rajasthan. In all 200 families, 100 tribal and 100 non-tribal families were selected randomly for the study. The required information was collected on a well structured questionnaire.

**Results:** While 100 percent non-tribal mothers have knowledge about immunization of children, about 50 percent tribal mothers knew something about mode of giving vaccination doses, place of its availability and likely post immunization problems for children. In non-tribal area 86.4 percent under five children were fully immunized, against 28.2 percent in tribal families.

**Conclusions:** For programmes like immunization of children, the group based approach would be more rewarding compared to area approach due to poor socio-economic development of marginalized group like tribals.

**Key words:** Tribal, Non-tribal, Children and Immunization

## INTRODUCTION

WHO launched the global immunization programme in 1974 as 'Expanded Programme of Immunization' (EPI) for prevention and control of six major fatal diseases like tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis and measles causing morbidity and mortality of children. These diseases are identified as easily preventable through immunization. The available vaccines to control these diseases are simple, safe and effective in terms of benefits and costs. Government of India also launched the same programme in 1978 and the same is in operation in all the states of the country with required modifications in subsequent years.<sup>1</sup>

The Indian Academy of Pediatrics has drawn time schedule ranging from birth to 18 years of age

along with vaccines which is being followed in our medical centres. The 'Mission Indradhanush' was launched in 2014 in India to achieve 100 percent immunization by 2020 to protect children of country against seven preventable diseases through vaccination.<sup>1</sup>

The major causes of new born deaths in India included factors like pre term births, neonatal infections, birth asphyxia, and congenital malformations. Prevalence of low birth weights and birth defects are considered as major causes for non-communicable diseases like diabetes mellitus, coronary artery diseases, and hypertension at later stage of life. As a result of various programmes of immunization, there has been substantial reduction in child death in India, from 1990.<sup>2</sup> However, the distribution of benefits has not been even across

regions and communities. Hence the assessment of difference in knowledge and practice of immunization programme by tribal and non-tribal communities in a similar rural set up is a topic of research relevance.

The specific objectives of the study were to assess the level of knowledge of tribal and non-tribal mothers about immunization in general and of under five children in particular; and to examine the extent of actual practice of immunization of under five children by the two communities.

## METHODS AND MATERIALS

The study is based on a cross section of sample households representing the two social groups, viz tribal and non-tribal households, selected randomly from a rural belt in southern Rajasthan. The southern Rajasthan of Udaipur district was selected on two counts. Firstly, the Rural Health Training Centre of Pacific Institute of Medical Sciences (PIMS) is situated in this region. Secondly, most of the villages in this belt have both tribal and non-tribal households.

The sample size calculated based on share of fully immunized children in Rajasthan (54.8%) as per National Family Health Survey (NFHS-4)<sup>3</sup> comes to 380<sup>4</sup>. The present study was carried out as a pilot study with sample size of 200 families having under five children in the study area which is more than half of the actually required sample size. The survey was conducted in those villages where tribal and non-tribal families are living together and limited to five villages to avoid impact of distance factor for immunization between the communities. Equal allocation of sample households was followed in each village which came out to be 20 families each representing tribal and non-tribal communities. While selecting the households it was ensured that there is atleast one under five child in each of the selected households. For the purpose of assessment of immunization coverage, the vaccination given to the children during 12 to 23 months of their age was ascertained.

The required data/information was collected on a well structured questionnaire which was pre-tested and modified to collect quantitative data and qualitative information. The tabular analysis of data was done using frequencies, arithmetic mean and standard deviation. The statistical significance between estimates of tribal and non-tribal groups was made using standard normal distribution test (SND/t test) and that for association of attributes was done through Chi-square test. Two levels of immunization and two levels of other factors were considered for getting the calculated value of Chi-square test. For the purpose of analysis partially

immunized and non-immunized cases were pooled together. The definition for fully immunized, partially immunized and non-immunized cases is as under.

**Fully immunized:** When the child had received Bacillus Calmette-Guerin (BCG), three doses of diphtheria, pertusis (whooping cough), and tetanus (DPT), and three doses of oral polio vaccine (OPV) and measles vaccine.<sup>5</sup>

**Partially immunized:** When the child had received some but not all vaccines.<sup>5</sup>

**Not immunized:** When the child had not received any of the vaccine.<sup>5</sup>

## RESULTS

The data from 200 selected households, 100 representing tribal families and another 100 households representing non-tribal families were collected by specially trained medical social workers posted in the Department of Community Medicine, Pacific Institute of Medical Sciences, Umarda, Udaipur. For selected extended families with two married brothers each having under five children, such cases were treated as a separate family and informations were collected from both the mothers. Thus, there were 100 mothers in each group. The survey work was carried out in the month of April-May, 2017 as the respondent family members were having more leisure time during these period. The data schedules were checked by the authors for internal consistencies before the analysis of collected data.

**Basic information of selected families:** The basic information about selected households is given in Table 1.

**Table 1: Basic information on selected households and under five children**

Particulars	Tribal	Non-Tribal
Selected households	100	100
Households with pucca houses	30	55
Households with kutchra houses	59	15
Households with semi- pucca houses	11	30
Average family size (Number) **	5.11	4.88
SD of family size	1.044	0.922
CV for family size	20.47	18.89
Total Under five (U5) year children	156	133
Average U5 children per household	1.56	1.33
SD of U5 children	0.719	0.558
CV for U5 children	46.07	41.98
Nuclear families	72	68
Three generation extended families	28	32

\*\* p value = 0.001

Note: The sample size being 100 each in both the groups, the absolute numbers coincide with percentage values.

SD= Standard Deviation; CV=Coefficient of Variation

**Table 2: Distribution of selected mothers according to literacy level**

Literacy level	Tribal (n)	Non-tribal (n)
Illiterate	57	27
Primary level	24	30
Middle	15	31
Secondary	04	10
Hr. Secondary & above	0	02

Note: As there are 100 mothers in each category the percentage for each level of literacy is the same as actual number given against each.

**Table 3: Knowledge of mothers about immunization**

Knowledge	Tribal	Non-tribal
Some knowledge on purpose of immunization	59	100
Timeliness of immunization	33	95
Modes of immunization	48	100
Places of immunization	45	100
Post immunization problems	48	100
Remedial measures for post problems	72	95

Note: As there are 100 mothers in each category the percentage for each type of knowledge is the same as actual number given against each.

In tribal area more than half of the houses were kutcha whereas in non-tribal area more than half of the houses were pucca. The average size of tribal families was 5.11 and that of non-tribal houses was 4.88 which show that the size of tribal families is more than that of non-tribal families. The difference in family size is statistically significant ( $p=0.01$ ). There were 156 under five year children in 100 selected tribal households against 133 under five children in 100 non-tribal households. More than two third of selected families were nuclear families and remaining were three generation extended families. The low C.V values for family size as well as number of under five children per household for non-tribal families indicate higher consistency for these factors in non-tribal group compared to tribal group.

### Literacy Level of Mothers

Literacy level of mothers of selected families in both tribal and non-tribal area is shown in table 2. While 57 percent of tribal mothers were illiterate, only 27 percent of non-tribal mothers were illiter-

ate. About 43 percent of non-tribal rural mothers were middle and above and only 19 percent tribal mothers were above middle level education. The family based health programmes in general and immunization programme in particular is expected to have positive association with education level of mothers.

### Knowledge of Mothers

The knowledge of selected tribal and non-tribal mothers about immunization is summarized in table 3. It was found that 100 percent non-tribal mothers have some knowledge about immunization of children while only 59 percent tribal mothers knew something about immunization. Similarly 95 percent of non-tribal mothers were aware about importance of timeliness of immunization against 33 percent tribal mothers. While all non-tribal mothers were aware about modes of giving vaccination doses, places of availability of these doses and likely post immunization problems for children, only less than 50 percent tribal mothers were aware about these facts.

### Practices by Mothers

Some of the health/immunization related practices of selected mothers for the health of their children and for their own safe delivery are summarized in table 4. While during pregnancy all non-tribal mothers paid visits to hospital, only 63 percent tribal mothers visited hospital. While 68.6 percent deliveries of tribal mothers were institutional, the same in non-tribal area was 76.7 percent indicating a marked difference in share of institutional delivery between these two rural communities. Similarly, there is a significant difference in the share of low birth weight of newborn in tribal and non-tribal families as 39.1 percent of newborn in tribal families were underweight against 8.3 percent in non-tribal families which may be due to lack of antenatal care taken by tribal mothers. While more than 90 percent children of non-tribal families were having immunization card with them, only 58 percent tribal families had immunization card with them. In non-tribal area 86.4 percent under five children were fully immunized, against 28.2 percent in tribal families.

**Table 4: Immunization related practices of selected mothers**

Practices	Tribal	Non-Tribal
Hospital visit of mothers during pregnancy (Number)	63 (63.00)	100 (100.00)
Breast feeding more than 6 months (Number)	85 (54.49)	100 (75.19)
Number of institutional delivery *	107 (68.6)	102 (76.69)
Low birth weight children (<2.5 kg) (Number)	61 (39.10)	11 (8.30)
Availability of immunization card (Number)	91 (58.30)	120 (90.20)
Fully immunized children (Number)	44 (28.20)	115 (86.46)
Partially immunized children (Number)	112 (71.79)	18 (13.53)

\*Statistically significant at  $p=0.01$ ; Figures in parenthesis are percentages to total number of mother/children.

**Table 5: Immunization and other associated factors**

Associated Factors	Immunization Status		p-value*
	Full	Partial	
<b>Type of house</b>			
Pucca	76	44	0.0229
Kutchra	83	86	
<b>Type of family</b>			
Nuclear	119	73	0.0013
Extended	40	57	
<b>Mother's literacy</b>			
Literate	56	125	<0.0001
Illiterate	103	5	
<b>Mother knowledge on immunization</b>			
Yes	135	75	<0.0001
No	24	55	
<b>Breast feeding upto 6 months</b>			
Yes	125	70	<0.0001
No	34	60	
<b>Caste</b>			
Tribal	44	115	<0.0001
Non-tribal	112	18	

\* Note: The degree of freedom is 1, for all factors.

**Immunization and associated factors**

Based on the collected data from selected households having atleast one child, efforts were made to identify factors associated with immunization of children. The association was tested using Chi-square test for statistical significance, the results of which are summarized below in table 5.

The type of houses, type of family, mothers literacy, mothers knowledge level, breast feeding practices and factors like caste were found to have significant association with immunization.

**DISCUSSION**

The dominance of kutchra houses and illiteracy among tribal mothers as well as large share of low birth weight children in tribal groups is indicative of the impact of poor socio-economic background of tribal families compared to non-tribal families on health of newborn children. The prevalence of nuclear family system in both tribal and non-tribal groups may be an attributing factor for incomplete immunization in rural areas as the scope for knowledge empowerment through intra family communication is limited in nuclear families. Although Laxmikant et al<sup>5</sup> reported that immunization status among study subjects showed no significant difference according to type of family. The immunization coverage in this study was found higher in non-tribal groups compared to tribal groups. Similar finding was reported by Zafer et al<sup>6</sup> in Udaipur district about two decades back also.

The literacy level of mothers seems to be an impacting factor in determining the level of immuni-

zation coverage of children in the study area. The higher knowledge level of mothers on timeliness, mode and places of immunization by non-tribal mothers in the study area is not inconformity with the findings of the study conducted by Varma et al<sup>7</sup> in Visakhapatnam district of Andhra Pradesh. Mira Johri et al<sup>8</sup> found that maternal health literacy is independently associated with child vaccination and initiatives targeting health literacy could improve vaccination coverage. Dayama et al<sup>9</sup> observed that poor maternal knowledge as an impacting factor for incomplete immunization coverage in children. In order to cover more number of tribal families under complete immunization programme of under five children, tribal oriented programmes for promotion of immunization may be required. Munda et al<sup>10</sup> also suggested the need to have more immunization coverage in their study area. Nath et al<sup>11</sup> suggested the need for concerted efforts to raise the knowledge and improve the practices of people towards immunization of children.

Inter relationship of socio-economic factors with knowledge of mothers seem to cause significant association of these factors with immunization. Similar findings were reported by Mathew<sup>12</sup> that there is a relationship between religion and caste and childhood vaccination. The vaccination rates are lower among infants with mothers having no or low literacy.

Similarly, in order to bridge the gap in ANC visits to medical centers by tribal mothers specific target programme may be required. Another area seeking attention of health agencies is the promotion of institutional deliveries for tribal mothers. Nijika Shrivastwa et al<sup>13</sup> found that by encouraging pregnant women to enroll in ANC programs and ensuring institutional births could improve childhood vaccination levels.

The non-availability of immunization card of children indicates the need for health education programme in rural areas to procure and preserve immunization card for every children. The study conducted by Suresh<sup>14</sup> stated that two crucial determinants of the full immunization coverage in selected states are availability of health card and antenatal care (ANC) visits of mother. There was significant association between poor immunization status and poor socio-economic status, home delivery, and not having immunization card in a study conducted by Naveen C Khargekar et al.<sup>15</sup> Immunization coverage was more with the presence of immunization card was also stated by Saurabh Kumar et al.<sup>16</sup>

The large share of unimmunized children of tribal families also suggests the need for focused programmes for enhanced rate of immunization in



tribal areas. The study by Angadi et al<sup>17</sup> also suggested to motivate parents to overcome the dismal scenario of immunization of in urban slums in Bijapur. In short, wherever tribal communities live along with other communities, tribal oriented approach for health promotion of tribal group is inevitable.

## CONCLUSION

It was found that 100 percent non-tribal mothers have some knowledge about immunization of children while only 59 percent tribal mothers knew something about immunization. While all non-tribal mothers were aware about modes of giving vaccination doses, places of availability of these doses and likely post immunization problems for children, only less than 50 percent tribal mothers were aware about these facts. During pregnancy all non-tribal mothers paid visits to hospital, but only 63 percent tribal mothers visited hospitals. In non-tribal group 86.4 percent under five children were fully immunized, against 28.2 percent in tribal families. The socio economic factors like mothers literacy, type of house, caste etc. are found associated with immunization.

The study revealed that the area approach for health improvement programmes may not ensure equitable distribution of benefits across communities in rural areas. Poor socio-economic development of marginalized groups like tribal does not provide adequate opportunities to avail the benefits out of such programmes by them. For programmes like immunization of children the group based approach would be more rewarding.

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