

# Comparative Analysis on Immunization Practices Among Parents And Health Personnel From Selected Urban Versus Rural Areas.

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## ABSTRACT

**Background:** Immunization does more than just protect individual. It protects entire population, preventing the diseases to spread.<sup>1</sup> Immunization is one of the most cost-effective health interventions known to mankind. Immunization is a proven tool for controlling and even eradicating disease.<sup>2</sup> **Aims and Objectives:** The aim of the present study was to assess immunization practices for parents and health personnel from selected urban versus rural area and provide information booklet on Childhood immunization. **Material and Method:** The sample size selected for the study was 800 of parents and 200 health personnel involved in immunization. Probability multistage random sampling technique is used for selecting samples. The setting of the study was 5 Talukas based on 5 subdivisions of Pune district. **Results:** More than half (51%) of the rural parents and 61.5% of the urban parents had fully immunized their child. Majority 55% of the rural parents had average knowledge and 44.8% of the urban parents had good knowledge. Majority 35% of the rural health workers had satisfactory practices and 41% of the urban health workers had good practices. **Conclusion:** The immunization practices were comparatively good in urban population than in rural population. Sustained efforts are required to achieve full coverage of immunization as well as enhancement of immunization practices.

**Keywords:** Immunization Practices, Coverage of Immunization, Parents and Health Personnel.

## 1. Introduction:

Globally, under five mortality rate has decreased, from an estimated rate of 91/1000 deaths per live births in 1990 to 43/1000 deaths per live births in 2015. <sup>3</sup> The annual number of under-five child deaths in Maharashtra was between 165,934 and 180,467 estimated during 1998-2000. In 2001, India's infant mortality rate was 66/1000 live births whereas Maharashtra's IMR was 45/1000 live births. It gradually fell down to 42/1000 live births in India and also of Maharashtra 25/1000 live births in 2012. Maharashtra, which eventually plans to take IMR down to 19 to 2014-2015 and 15 in the 12th five-year plan period.<sup>4</sup>

A study was conducted to assess the child immunization coverage and availability of safe motherhood intervention services for expecting mothers under RCH programmed in Rajasthan. Fully immunized children were more in urban areas (82.1%) as compared to rural (45.1%) areas.<sup>5</sup>

A baseline survey of total cold chain status was conducted in early 2008 in the hospitals and institutions in Kolkata Municipal area. The survey revealed gross discrepancies in availability and distribution of cold chain equipment, innumerable cold chain points with improper utilization, lack of scientific knowledge regarding cold chain guidelines as per Government of India (GOI) protocol and lack of monitoring and supervision.<sup>6</sup>

### 1.1 Aim of the study:

The aim of study is to observe immunization practices in parents as well as of health personnel from urban and rural areas of Pune. Based on their immunization practices information booklet was developed and also provided.

### 1.2 Objectives of the study:

- 1) To assess knowledge and practices about immunization among parents and health personnel of urban and rural areas.
- 2) To compare immunization knowledge and practices among parents and health personnel from urban and rural areas.
- 3) To assess reasons for non-compliance of immunization.
- 4) To find out association of selected demographic variables with knowledge and practices of immunization among parents and health personnel of urban and rural areas.
- 5) To develop and provide information booklet on immunization for parents and health personnel.

## 2. Materials & Methods:

2.1 **Research Design:** The research design adopted for study was cross-sectional & comparative survey design.

2.2 **Population and Sample:** The population of the present study comprises parents of under 5 age child and health personnel.

2.3 **Sample Size:** The estimated sample size for the parents is determined largely by three factors: <sup>7</sup>

- i. The estimated prevalence (P) of variable – for the study survey was done by National Rural Health Mission across 15 states, in which immunization coverage of Maharashtra is 71%. <sup>8</sup>
- ii. The desired level of confidence – for this study taken as 95%.
- iii. Absolute precision / acceptable error (E) 01%
  - a. Sample size determination  $(n) = Z^2 \frac{1-\alpha}{22} \frac{p q}{d^2}$

Therefore, the sample size for parents was taken as 800 who fulfilled the criteria.

The estimated sample size for the health personnel is determined largely by three factors:

- i. The estimated prevalence (P) of variable – for the study was done on Evaluation of immunization knowledge, practices, and service delivery in the private sector. The private sector demonstrated about 10% of lack of quality of care and management in terms of health workers' knowledge of immunization schedules, waste and vaccine management practices, and exchange of health information with the public sector.<sup>9</sup>
- ii. The desired level of confidence – for this study taken as 95%.
- iii. Absolute precision / acceptable error (E) 04%

Therefore, the sample size for health personnel was taken as 200 who fulfilled the criteria.

Multistage sampling technique was used for selecting samples who met the designated set of criteria during the period of data collection. First stage - The 14 talukas of Pune are subdivided as east, west, central, south and north. With help of blind fold method randomly selected talukas from each subdivision. Second stage -For health personnel randomly selected urban and rural area's PHC and attached Subcentre (SC). Parents were randomly selected from urban and rural area. Third stage – Health personnel were randomly selected from PHC and SC. Parents were also selected randomly as every 4th house was taken as sample and if there is no under-five age child the next house was taken as sample.

## 2.4 Sampling Criteria

### Inclusion Criteria

- Parents who are having under-five children and who were living in selected urban and rural areas of Pune.
- Health care personnel involved in vaccination & working in selected urban and rural areas of Pune.

**Exclusion Criteria-**Parents and health personnel who were not willing to participate in this study.

### 2.5 Hypothesis

H<sub>1</sub> –There will be statistical significant difference in knowledge and practices regarding immunization of parents from urban and rural areas.

H<sub>2</sub> - There will be statistical significant difference in knowledge and practices regarding immunization of health personnel from urban and rural areas.

### 2.6 Ethical considerations:

The study has got approved from Institution Ethical Committee. The written informed consent was taken from parents and health personnel for participation in study. It was ensured to participants whatever information especially confidential to which he/she has had access during the course of this the research will be used only for academic purposes.

**2.7 Tool and Technique:** The researcher prepared two separate tools for parent and health personnel.

Tool for health personnel is based on three sections

Section A: This section included four items on demographic profile.

Section B: Comprised of items on basic information regarding immunization. (45 - 37 : Excellent Knowledge, 36 - 28 : Very good, 27 - 19 : Good, 18 - 10 : Satisfactory, 9 - 0 : Not satisfactory)

Section C: It comprises of observation checklist on the immunization practices.

(30-26 : Excellent Practice, 25-21: Very good, 20-16: Good, 15-11: Satisfactory, 10-0: Not satisfactory)

Tool for Parent is based on three sections

Section A: This section included ten items on demographic profile.

Section B: Comprised of items on basic information regarding immunization. (7-10 :Good, 4-6:Average, 0-3: Poor)

Section C: It comprises of reported practices checklist on the immunization.

(Fully immunized, Partially immunized and Not immunized).

Structure interview technique and observation checklist is used for data collection.

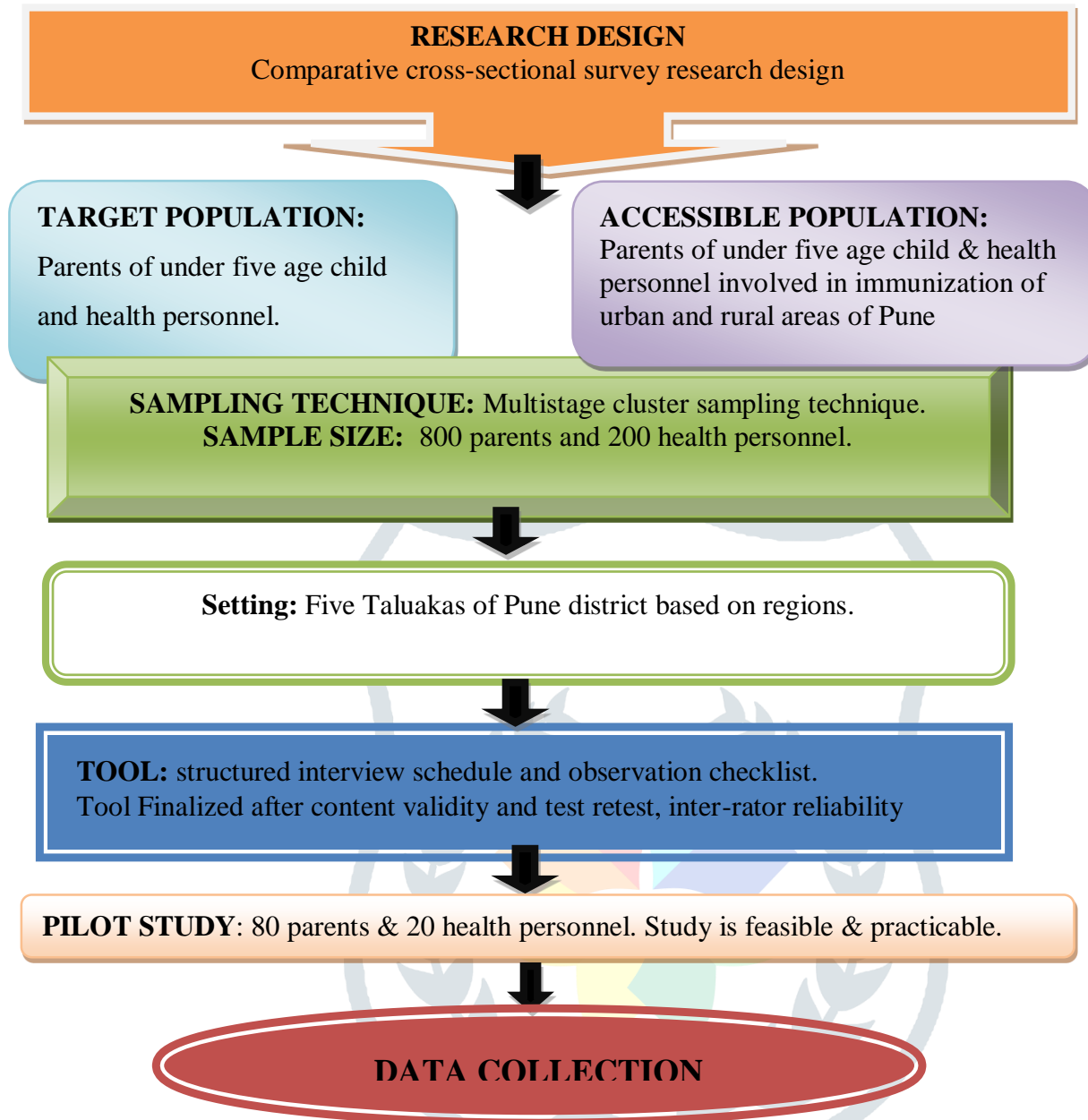


Fig no. 1: Schematic presentation of Research Methodology

### 3. Results and Discussion

#### 3.1 Major Findings:

Majority 35% of the urban mothers had age 23-27 years and the rural mothers were 36.8% in age group 28-32 years. In the urban mother's majority 45.3% and 39.3% in rural mothers had higher secondary education. Urban and rural parents had majority (62.5%, 52.5%) of them two children. Majority of (61.8%, 58.8%) of the urban and rural samples were females. Majority of (97.3%, 89.5%) of the urban and rural samples had institutional delivery of the index child.

Majority (43%, 37%) of the urban and rural health personnel had age 23-27 years. Majority of 88% of the urban and rural personnel were females. Majority of 64% of the urban and 50% of rural health personnel were ANM. Majority 38% of the urban and rural personnel had experience six months to one year.

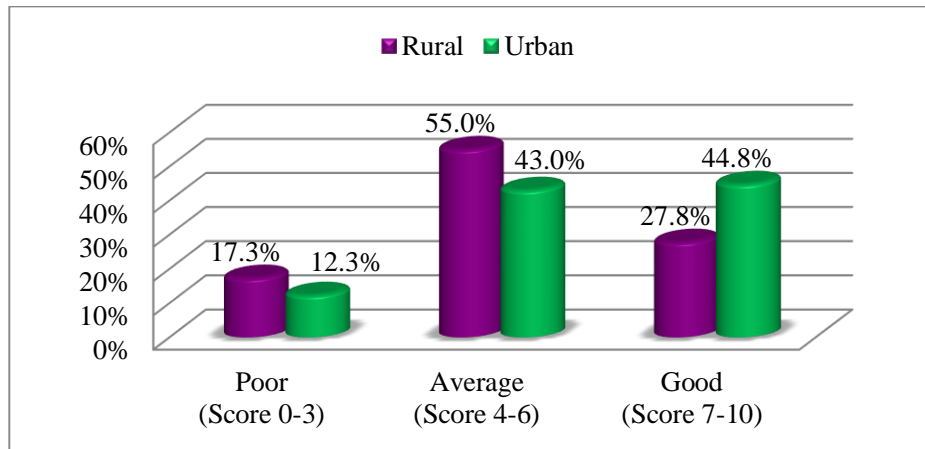


Fig no. 2 Bar diagram showing knowledge regarding immunization among parents.

The fig no. 2 show more than half of the rural parents had average knowledge regarding immunization, 27.8% of them had good knowledge and 17.3% of them had poor knowledge regarding immunization. Whereas 43% of the urban parents had average knowledge regarding immunization, 44.8% of them had good knowledge and 12.3% of them had poor knowledge regarding immunization. Average knowledge score of rural parents was 5.4 which was 6.1 for the urban parents. The z-statistic value for this comparison was found to be 4.9. Corresponding p-value was found to be very less (p-value=0.000, less than 0.05). The null hypothesis was rejected. The average knowledge score of urban parents was significantly higher than that for rural population.

Table No.1: Description of practices regarding immunization among urban and rural parents.

N-400,400

S.No.	Vaccine	Admin	Urban		Rural	
			Freq	%	Freq	%
1	Polio	0	389	97.3%	368	92.0%
		1	385	96.3%	358	89.5%
		2	382	95.5%	353	88.3%
		3	368	92.0%	322	80.5%
		4	224	56.0%	193	48.3%
2	BCG		389	97.3%	367	91.8%
3	DPT	1	385	96.3%	358	89.5%
		2	382	95.5%	353	88.3%
		3	368	92.0%	322	80.5%
		4	223	55.8%	193	48.3%
4	Hepatitis-B	1	385	96.3%	358	89.5%
		2	382	95.5%	353	88.3%
		3	368	92.0%	325	81.3%
5	Measles		311	77.8%	258	64.5%
6	Vitamin-A	1	214	53.5%	231	57.8%
		2	59	14.8%	40	10.0%
		3,4,5	19	4.8%	4	1.0%

The table no.1 show that in urban and rural population, more coverage was found for BCG, polio, DPT and Hep -B which gradually fell down for measles and booster doses. More than half parents in urban as well as rural population DPT gave vitamin-A first supplement to their children which again gradually fell down for booster doses.

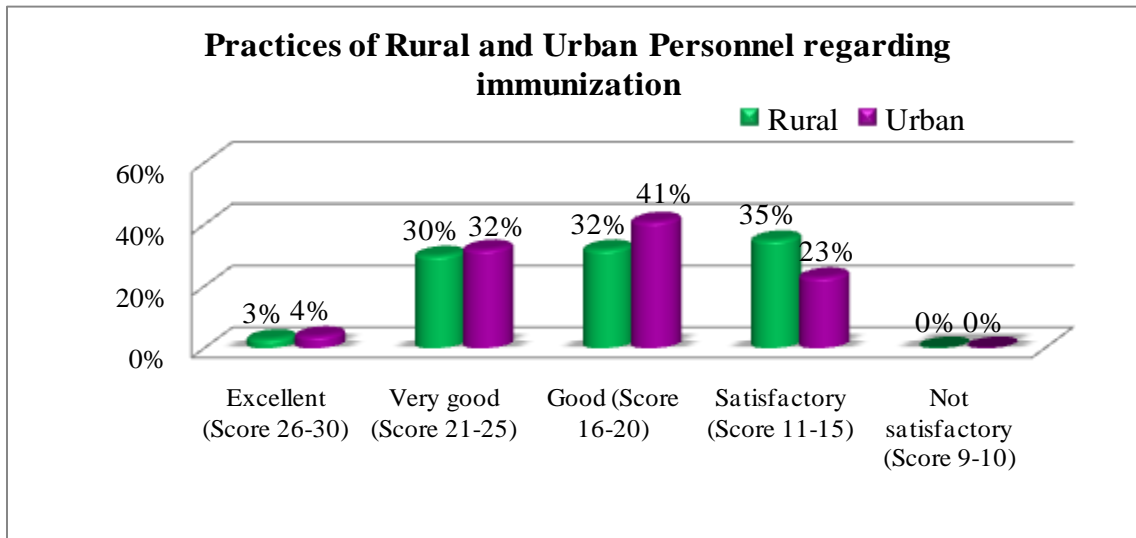
More than half (51%) of the rural parents had fully immunized their child, 40.8% of them had partially immunized their child and 8.3% of them had not immunized their child at all. Majority of 61.5% of the urban parents had fully immunized their child, 35.8% of them had partially immunized their child and 2.8% of them had not immunized their child at all.

Table 2: Comparison of knowledge of Rural and Urban health personnel regarding immunization.

N=100,100

S.No.	Population	Mean	SD	z	p-value
1.	Urban	30.5	6.0	1.9	0.059
2.	Rural	28.8	6.3		

Table no 2 shows that average knowledge score of rural health personnel was 28.8 which were 30.5 for the urban health personnel. The z-statistic value for this comparison was found to be 1.9. Corresponding p-value was found to be large (p-value=0.059, greater than 0.05). The average knowledge scores of urban health personnel though higher than that for rural health personnel population, the difference was not statistically significant.



**Fig no.3: Bar diagram showing practices of health personnel regarding immunization**

The figure no.3 shows that 30% of the rural health workers had very good practices regarding immunization, 32% of them had good practices, 35% of them had satisfactory practices and only 3% of them had excellent practices regarding immunization. 32% of the urban health workers had very good practices regarding immunization, 41% of them had good practices, 23% of them had satisfactory practices and only 4% of them had excellent practices regarding immunization.

The z-statistic value for this comparison was found to be 1.3. Corresponding p-value was found to be large (p-value=0.195, greater than 0.05). The average practices score of urban health personnel though higher than that for rural health personnel population, the difference was not statistically significant.

**Table 3: Description of reasons for non-compliance of immunization in rural and urban population. N=400,400**

S.No.	Reason for non-compliance	Rural		Urban	
		Freq	%	Freq	%
1	Sickness	18	9.1%	4	2.5%
2	Financial problem	12	6.1%	19	12.0%
3	Unawareness of need for immunization	36	18.3%	17	10.8%
4	Mother too busy	27	13.7%	16	10.1%
5	Place & time not known	7	3.6%	4	2.5%
6	Place for immunization too far	6	3.0%	0	0.0%
7	Unaware of need to return for subsequent doses	45	22.8%	61	38.6%
8	Fear of side reaction	23	11.7%	22	13.9%
9	Vaccinator's absence	10	5.1%	0	0.0%
10	Any other	13	6.6%	15	9.5%
	<b>Total</b>	<b>197</b>	<b>100%</b>	<b>158</b>	<b>100.0%</b>

The table no. 3 shows that, in urban population, the top three reasons for non-compliance of immunization were Unaware of need to return for subsequent doses, Fear of side reaction and financial problem. In rural population, the top three reasons for non-compliance of immunization were Unaware of need to return for subsequent doses, Unawareness of need for immunization and Mother too busy.

All the demographic variables such as age, education of mother, parents' occupation, monthly income, type of family, no. of children, gender, place of delivery, birth order except for *age of the index child* were found to have significant association with knowledge of the rural & urban parents regarding immunization. All the demographic variables except for *mother's age* were found to have significant association with practices of the rural parents regarding immunization. All the demographic variables except for *father's occupation and age of index child* were found to have significant association with practices of the urban parents regarding immunization. The demographic variables *category of job and experience* were found to have significant association with knowledge of the rural and urban health personnel regarding immunization. The demographic variables *age, category of job and experience* were found to have significant association with practices of the urban health personnel regarding immunization. The demographic variables *age and experience* were found to have significant association with practices of the rural health personnel regarding immunization.

The information booklet on immunization was provided to health personnel's and parents after data collection.

### 3.2 Discussion:

In present study 55% of the rural parents had average knowledge regarding immunization. 44.8% of urban parents had good knowledge regarding immunization. A highly significant association is noted between education and knowledge regarding immunization (p-Value < 0.001). This is accordance to a study conducted by Dalal A. at Goa. Where none of graduate mother had any unimmunized child.<sup>10</sup> Similarly a study was conducted by Singh.M.C in Wardha district. Mothers had a fair knowledge regarding need for immunization but a poor knowledge regarding the prevention of diseases.<sup>11</sup>

In the present study, the percentage of fully immunized children has been more for urban (61.5%) than for rural (51%). A study was conducted by Gupta R.S to assess the child immunization coverage. Fully immunized children were more in urban areas (82.1%) as compared to rural (45.1%) areas.<sup>12</sup> A survey study was conducted by Bhatia V. in urban and rural slum areas UP, Chandigarh. Only 58.66% children in urban slums were fully immunized, whereas 38% children immunized in rural areas.<sup>13</sup>

In urban population, the top three reasons for non-compliance of immunization were unaware of need to return for subsequent doses, fear of side reaction and financial problem. In rural population, the top three reasons for non-compliance of immunization were unaware of need to return for subsequent doses, unawareness of need for immunization, mother too busy.

Similar findings were reported by Desai V. K. as the commonest reason for non-vaccination was ignorance of parents about the seriousness of the disease and the need of vaccination.<sup>14</sup> Jain S.K. which shows the main reason for drop-out or non-immunization was lack of information about the immunization programme (41.3%).<sup>15</sup>

41% & 45% of health personnel of rural and urban had good knowledge. The study was done on Evaluation of immunization knowledge, practices, and service-delivery in the private sector in Cambodia. The private sector demonstrated a lack of quality of care and management in terms of health workers' knowledge of immunization and vaccine management practices and exchange of health information with the public sector.<sup>9</sup>

35% of the rural health workers had satisfactory practices regarding immunization. 41% of the urban health workers had good practices regarding immunization. Similarly the study was done on Evaluation of the Cold-Chain for Oral Polio Vaccine in a Rural District of India. 65% of the facilities adequately maintained in these primary/community health centers (n=20) procured an average cold chain compliance score of 74%.<sup>16</sup>

### 3.3 Conclusion:

Immunization coverage has been increased substantially in general in recent year, a sizable proportion of children is not being immunized. The study identified, the average knowledge and practice of urban parents was significantly higher than that for rural parents. The average knowledge and practice of urban health personnel though higher than that for rural health personnel population, the difference was not statistically significant.

### 3.4 Recommendation:

- The health education should be emphasized to enhance respondents' knowledge about complete immunization.
- Immunization programme has to be incorporated in school health programme.
- Special activity should planned to immunize missed children should make aware about fact and schedule.
- Health personnel should utilize pulse polio days as a good opportunity for advocacy of routine immunization to target audience.
- TOT can be organized for health personnel regarding immunization.

### 3.5 Limitations:

- Limited Immunization practices of health personnel were observed due to time constrain.
- Findings may be generalized only to one district.

### Relevance of the study:

Community as well as hospital area health personnel need to be educated and made aware about the fact. This study provides us important insight in existing level of awareness among the parent & health personnel.

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**Conflict of Interest:** Nil

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