Original Research Article

Anganwadi based comparative study of immunization status of children in urban, rural and tribal areas of Udaipur district

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ABSTRACT

Background: Immunization is the most powerful and cost effective weapon for the prevention and control of potentially infectious diseases, it also interrupts disease transmission in community.
Methods: Facility based cross sectional study to compare the immunization status of children attending Anganwadi centers in urban, rural and tribal areas of Udaipur district through two stage sampling technique.
Results: 68.9% respondents from urban area had immunization card followed by rural (59.6%) and tribal (50%) area. Regular vaccination was in 67.8% children.
Conclusions: Low level of immunization is more in tribal and rural children than urban children.

Keywords: Imunization status, Anganwadi, Tribal, Urban, Rural

INTRODUCTION

Immunization not only reduces morbidity and mortality from potentially infectious diseases but also interrupts disease transmission in the community. However, in a developing country like India, a major proportion of children were not immunized at all or received partial immunization, causing an increased morbidity and mortality rate in infants and children. In India, even though there is increased accessibility of health care services in both urban and rural areas, the utilization of these services by different segments of the societies are completely different. 27.8% of Indian urban poor live in slums and are at highest risk of disease transmission and MCH indicators among slum-dwellers show that their health is 2-3 times worse than people living in urban areas.[1] Even though wild poliovirus has been absent in India since January 2011 and has also declared India as a "polio-free" nation in March 2014, we are still very behind in regard to the other vaccine-preventable infectious diseases. As per NFHS III data, only about 44% of infants received complete immunization, which is comparatively much lower than the desired percentage of 85% (WHO, 2014). Nationwide coverage levels for immunization services are more than 90% for all vaccines. More than 12.5 million under five children in developing countries die each year, 9 million of these are due to vaccine preventable diseases. Proper implementation of universal immunization can prevent these cases (NFHS, 2006). In India, although the number of children with infectious diseases has decreased significantly, there still exist problems like non-immunization, partial immunization, delay in initiation and completion of immunization of children. It is estimated that in India about 57% of children attending a health facility leave the clinic without receiving the required vaccine (NFHS, 2006). The child's health is

dependent upon the mother's health and cannot be considered in isolation.[2,3]

Objective

The objective was to compare the immunization status to suggest measures to improve immunization status of children attending Anganwadi in urban, rural and tribal areas of Udaipur district.

METHODS

Study design and area

Facility based cross sectional study which was conducted at Anganwadi centers of Udaipur district which had total 3175 Anganwadi centers, out of which 2805 were main and 370 were mini Anganwadi centers. Study was conducted in main Anganwadi centres.

Sample size

Where the population was unknown, the sample size can be derived by computing the minimum sample size required for accuracy in estimating proportions by considering the standard normal derivation set at 95% confidence level (1.96), picking a choice or response (50%=0.5) and the confidence interval (0.05±5). The formula was,

$$n = \frac{Z^2 pq}{e^2},$$

$$= \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2},$$

$$= \frac{0.9604}{0.0025},$$

=0.9604/0.0025

=384.16=385.

Z=1.96 , p=0.5 (50%), q=1-p=0.5, e=0.05,

Z=standard normal deviation set at 95% confidence interval,

p=percentage picking a choice or response,

e=the desired level of precision (i. e. the margin of error).

From our calculation, our sample size was 385 but for reducing error total sample taken were 450.

Study participants

All the children present at selected Anganwadi centre on the day of visit were included in the study.

Inclusion criteria

All children from 6 months to 6 years present on visit day of selected urban, rural and tribal Anganwadi centers of Udaipur district were included in the study.

Exclusion criteria

Children absent on visit day were excluded.

Study period

The study duration was 6 months from February 2019 to July 2019.

Sampling method

Two stage sampling technique was used for the selection of Anganwadi centers for the study.

Sampling technique

There were 12 blocks in Udaipur district. Out of which there were 3 rural blocks, 1 urban block and 8 tribal blocks.

In first stage, after line listing and by lottery method, one each from rural and tribal block were chosen. Since there was only one block in urban area which was chosen.

In second stage, all the Anganwadi centers under these selected blocks were line listed and by systemic random sampling, every 5th Anganwadi centers was chosen.

So, 28 Anganwadi centers out of 138 in Udaipur city block (urban), 25 out of 126 Anganwadi centers in Badagaon block (rural) and 28 Anganwadi centers out of 138 were selected from Kherwara block (tribal), so a total of 81 Anganwadi centers were selected.

In the next step information was gathered from all the children attending Anganwadi on that particular day.

Information regarding the immunization was gathered from Anganwadi records and immunization cards.

Data analysis

Data was entered in Microsoft excel and data analysis was done on SPSS version 16. The plan was submitted to the ethical committee of the institute and study was initiated only after ethical approval. Data was expressed in percentages. Appropriate test of significance was applied. P<0.05 was considered significant.

Ethical issues

A written and informed consent was taken from all concerned competent authority/study subjects. No

pressure or coercion was exerted on subjects for participation in the study. Confidentiality and privacy were ensured at all stages. Data was used for research purpose only.

RESULTS

From Table 1, 34.6% Anganwadis are from urban area followed by tribal area (34.6%) and rural areas (30.8%) which shows near equal representation of whole different group of population.

Table 2 reveals that more number of the respondents (56.9%) are from male category and rest were females (43.1%). In urban (55.2%), rural (57.7%) and tribal (58.3%) areas male predominance was maintained equally.

In our study, 68.9% respondents from urban area had immunization card followed by rural (59.6%) and tribal area (50). This difference was found statistically significant (Chi-square value=10.816, p=0.0).

Table 1: Distribution of selected Anganwadi in Udaipur district.

Anganwadi type	No. of Anganwadi	Percentage
Urban	28	34.6
Rural	25	30.8
Tribal	28	34.6
Total	81	100

Table 2: Distribution of children according to gender with type of location of Anganwadi.

Gender	Location			Total
	Urban	Rural	Tribal	
	N (%)	N (%)	N (%)	N (%)
Female	78 (44.8)	66 (42.3)	50 (41.7)	194 (43.1)
Male	96 (55.2)	90 (57.7)	70 (58.3)	256 (56.9)
Total	174 (100)	156 (100)	120 (100)	450 (100)

Table 3: Distribution of children according to availability of immunization card.

Immunization card	Urban	Rural	Tribal	Total	Chi-square value	P value
	N (%)	N (%)	N (%)	N (%)		
Yes	120 (68.9)	93 (59.6)	60 (50)	273 (60.7)		
No	54 (31.1)	63 (40.4)	60 (50)	177 (39.3)	10.816	0.000
Total	174 (100)	156 (100)	120 (100)	450 (100)		

Table 4: Distribution of children according to vaccination schedule.

Vaccination schedule	Urban	Rural	Tribal	Total	Chi square	P value
	N (%)	N (%)	N (%)	N (%)		
Regular	129 (74.1)	104 (66.7)	72 (60)	305 (67.8)		
Irregular	45 (25.9)	52 (33.3)	48 (40)	145 (32.2)	6.635	0.03
Total	174 (100)	156 (100)	120 (100)	450 (100)		

Table 5: Distribution of children according to vaccination status.

Vaccination status	Urban	Rural	Tribal	Total	Chi square	P value
	N (%)	N (%)	N (%)	N (%)		
Fully immunized	51 (29.4)	46 (29.5)	44 (36.7)	141 (31.3)		
Partially immunized	85 (48.8)	75 (48.1)	42 (35)	202 (44.9)	6.5026	0.16
Non-immunized	38 (21.8)	35 (22.4)	34 (28.3)	107 (23.8)		
Total	174 (100)	156 (100)	120 (100)	450 (100)		

Table 6: Distribution of children according to reasons for partial immunization.

Reasons	Urban	Rural	Tribal	Total	Chi square	P value
	N (%)	N (%)	N (%)	N (%)		
Child sick	35 (41.2)	18 (24)	13 (30.9)	66 (32.7)		
Child irregular at AW	14 (16.5)	23 (30.7)	10 (23.8)	47 (23.3)	7.3894	0.28
Complication after first dose	26 (30.6)	23 (30.7)	13 (30.9)	62 (30.7)		
Other*	10 (11.7)	11 (14.6)	6 (14.4)	27 (13.3)		
Total	85 (100)	75 (100)	42 (100)	202 (100)		

*Religious belief, migration of family, lack of information.

In Table 4, 67.8% of total children follows regular vaccination schedule. Majority of urban children (74.1%) followed by rural (66.7%) and tribal (60%) were following regular vaccination schedule This difference was found statistically significant (Chi-square value=6.635, p=0.03).

Table 5 shows that out of total subjects only 31.3% were fully immunized, rest were either partially immunized or non immunized. In urban area (29.4%) full immunization status was similar to rural area (29.5%) but in tribal area (36.7%) it was slightly better. In urban area (48.8%) were partially immunized which was slightly better than rural (48.1%) and tribal area (35%). This difference was found statistically significant (Chi-square value=6.5026, p=0.16).

Table 6 shows that 32.7% children were partially immunization because of getting sick after vaccination followed by 30.7%, 23.3% and 13.3% due to complications after first dose, child irregular at Anganwadis and other (religious belief, migration of family, lack of information) respectively.

DISCUSSION

A total of 81 Anganwadis children were evaluated in this study over a period of 6 months. In this study a higher proportion of male children (56.9%) as compared to female children (43.1%) were observed at Anganwadi centers. In the study by Mandal et al 49.20% of children were male and 50.79% were female.[10] In the study conducted by Deshmukh et al in under six children 52% were male and 48% were female.[11] In all three categories of rural, urban and tribal Anganwadis, proportion of male children (55.2% to 58.3%) was higher than female children (41.7% to 44.8%).

In our study, only 68.9% respondents from urban area had immunization card followed by rural (59.6%) and tribal (50%) area.

In the present study, it was found that out of total study children, completely immunized children were 31.3%, partially immunized children were also 44.9% and non-immunized children were 23.8%. These findings were similar to Panda et al 1993 study that found complete immunization coverage was 27%.[4] In our study

immunization status was also approximately similar to Srivastav et al 2012 study in which it was found that only 33.9% of total children registered for the study were completely immunized and 51.1% were partially immunized.[9] In our study immunization status was lower than NFHS III data, which showed about 44% of infants received complete immunization, which was comparatively much lower than the desired percentage of 85% (WHO, 2014).[12] Contrary to our study, Biswas et al 2011 22.9% of the children did not receive any vaccine and 77.1% was partially immunized and not even a single child was fully immunized.[5] Singh 2013 in his study 708 (94.8%) were fully immunized.[6] Pandey 2016 it was found that 76.19% of the children were fully immunized against all the six vaccine preventable diseases.[7] While 22.86% and 0.95% were partially immunized and unimmunized respectively. Moluguri 2019 this study 87.6% were completely immunized and 12.4% were partially immunized.[8]

In our study it was found that the most common reason of partial immunization among urban children was due to sickness of children (44.7%). Among rural children the most common reason of partial immunization was that children were irregular at Anganwadis (37.3%). Among tribal children the most common reason of partial immunization was that children were sick (37.2%) and complication after first dose (37.2%). In another study of Singh 2013 main reasons for incomplete immunization were parental indifferences or migration of the child/ family.[6] Pandey 2016 studied that major reasons for non immunization were lack of awareness for immunization, no faith in immunization and OPV being considered the only vaccine, lack of motivation, lack of information, and various obstacles were the reasons for partial immunization.[7]

Limitation

The limitation of the present study was that when the immunization card was not available the required information was based on the history of the mother which would have led to recall bias.

CONCLUSION

In our study, low level of immunization is more in tribal and rural children than urban children. Because urban

areas have better access to health services and private health care facilities. The author concludes that immunization coverage in rural and tribal can be increased by strengthening the existing immunization system through ICDS and incentivizing the efforts of the grass root level workers like ANM, ASHA and Anganwadi workers.

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