

ORIGINAL ARTICLE

**IMMUNIZATION STATUS OF 1-5 YEAR OLD CHILDREN AND FACTORS AFFECTING IT: A HOSPITAL BASED STUDY**

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**Abstract**

**Aim:** To determine the immunization status of children as per national immunization schedule admitted in pediatric ward. **Design:** Hospital based descriptive, cross-sectional study conducted from January 2014 to June 2014. **Setting:** Tertiary referral teaching hospital. **Patients:** All patients admitted in pediatric ward satisfying inclusion criteria were included in the study. Information regarding immunization status was taken from the primary care giver and available medical records of immunization status were verified. Children were classified as completely immunized as per age and national immunization schedule or partially immunized or unimmunized. **Results:** Out of total 840 children, 520 (61.9%) were completely immunized, 312 (37.1%) were partially immunized and 8 (1%) were unimmunized. Fully immunized males were 61.4% and females were 62.7% ( $p > 0.05$ ). As per education of mother, 52 (38.2%) were fully immunized children with illiterate mothers, 150 (52.6%) children were full immunized when mother had primary education, 244 (70.7%) children were fully immunized when mother had passed higher secondary (HSC) education and 74 (100%) were fully immunized if mother was graduate ( $p < 0.001$ ). **Conclusion:** Mother's education significantly influences the immunization coverage among the under-fives. Sex of a child had no significant association with immunization coverage in 1-5 year.

**Keywords:** Immunization, under 5 children

**Introduction**

Immunization is one of the most cost effective public health interventions which directly or indirectly prevents the bulk of mortality in under-fives. Complete vaccination of each and every child is the current need to reduce mortality and morbidity of under five in India. Since, the program of immunization on the whole was not found satisfactory in some of the states including Maharashtra (1) and until now no study was done to evaluate immunization status of children in rural area of Maharashtra, the current study was carried out in a tertiary level teaching hospital in rural area to determine the immunization status in under 5 children in rural Maharashtra.

**Methods & Materials**

This is a hospital based descriptive, cross-sectional study conducted from January 2014 to June 2014. After taking permission from college ethics committee, under five patients admitted in pediatric ward during the period of study were included. Patients 5 years or above and less than one year were excluded from the study. Lack of reliable immunization history and readmission of a previously enrolled patient were excluding criteria in our study. The required information was obtained from prime care taker with pre-designed proforma after obtaining informal consent. The accuracy and validity of the information was confirmed by immunization card in possible situations and inspection for the BCG scar. Most common single reason responsible for un-immunization or partial immunization was noted.

Educational status of mother was classified as illiterate, primary educated i.e. studied up to 10th class, higher secondary educated i.e. studied up to 12th class and graduate i.e. having a degree in any field after 12th standard. Children were classified as fully immunized (received all vaccine in proper doses and frequency as per universal immunization program upto the age), partially immunized (received some vaccine as per universal immunization program but not completely immunized) and not immunized (a child who had not yet received any vaccine appropriate for the age, though may have received polio drops in the pulse polio drive). Statistical analysis of data in the form of comparison of immunized and un-immunized status of the child to age, sex and education of mother was done with excel and percentages and chi square test. P value  $< 0.05$  was considered as significant.

**Results**

A total of 840 children were included in the study and the male to female ratio was 1.6:1. As per age, 388 (46.2%) children were between 12-24 months of age, 184 (21.9%) were between 25 -36 months, 74 (8.8%) were between 37-48 months and 194 (23.1%) were between 49-60 months. Mother was illiterate in 136 (16.2%) cases, primary educated in 285 (33.9%) cases, HSC educated in 345 (41.1%) cases and graduate in 74 (8.8%) cases. Out of total 840 children, 520 (61.9%) were completely immunized, 312 (37.1%) were partially immunized and 8 (1%) were unimmunized. Immunization coverage for Bacillus Calmette–Guerin (BCG), Oral Polio Vaccine (OPV) zero dose, OPV + Diphtheria Pertussis Tetanus (DPT) first dose, OPV + DPT second dose, OPV + DPT 3rd dose and measles vaccine was found to be 823 (97.9%), 840 (100%), 791 (94.2%), 776 (92.4%), 727 (86.5%) and 676 (80.4%) respectively. Table 1 depicts the immunization status as per gender and literacy of the mother. Reasons for incomplete immunization are depicted in Table 2.

**Table 1- Immunization Status According To Demographic Factors**

Factor		Fully Im-munized Children (n=520)	Not Fully Immunized Children (n=320)	P value
Sex	Male	320 (61.4%)	201 (38.6%)	$p > 0.05$
	Female	200 (62.7%)	119 (37.3%)	
Educa-tion of Mother	Illiterate	52 (38.2%)	84 (61.8%)	$p < 0.001$
	Primary	150 (52.6%)	135 (47.4%)	
	HSC	244 (70.7%)	101 (29.3%)	
	Graduate	74 (100%)	0	

**Table 2 – Reason for Immunization Failure**

Reason	Number of Children (%)	
Lack of Motivation	142 (44.4)	
Lack of Information	17 (5.3)	
Others	Fever	93 (29.1)
	Loose Motions	9 (2.8)
	Respiratory Infection	33 (10.3)
	Low Birth Weight	26 (8.1)

## Discussion

In the present study the percentage of fully immunized children was 61.9%. Similar findings were noted in National Family Health Survey (NFHS) - 3 for Maharashtra state (1) and studies done by Wadgave et al (64.28%) and Yadhav et al (60.8%). (2,3) But Nair et al (4) found that 77.5% children were fully immunized while, Nath et al (5) Mathew et al (6) Kumar et al (7) Manjunath et al (8) Bhandari et al (9) and Nirupam et al (10) noted very low percentage of fully immunized children (i.e. 44.1%, 25%, 17.8%, 50%, 44.7% and 34.5%) respectively. This difference in the percentage of complete immunization status of children can be due to study population selected and the state in which study was conducted. Nair et al (4) had conducted the study in Kerala while other studies were conducted in states of Rajasthan and Uttar Pradesh. The difference in the findings underlines demographic variations and the need of effective and uniform implementation strategy of Universal immunization program (UIP) to cover the every individual child. Immunization coverage excluding children less than 1 year of age showed dropout percentage of 7.6% between 1st and 3rd doses of OPV/DPT. There was decreasing trend of immunization as the age progressed. Also there was no gender variation in the immunization status. The reason for decreased immunization with increasing age can be multifactorial such as decreased motivation on the parts of parents, childhood illness resulting in postponement of dose or sometimes completely missing the dose. Similar findings of non-significant association of immunization status with sex of child were also noted by Yadhav et al (3) Bhandari et al (9) and Nirupam et al. (10).

Children whose mothers had higher education level showed higher percentage for full immunization which was also clinically significant. Similar finding showing a positive correlation between maternal education status and complete immunization status of child was reported by Mathew in a review study. (11) Among the routine vaccines under 1 year of age, OPV/DPT 3rd dose and measles vaccine were the least to be received. We tried to enquire regarding the cause of dropout in vaccination and lack of motivation followed by sickness at the time of vaccination was found to be the commonest cause. Since our study was conducted in a rural population the accessibility to resources are limited and once the parents were sent back due to child's sickness they were not motivated to come again. This finding was not reported by other authors. Caretakers were enquired regarding the vaccines and diseases prevented by it, most of them were aware of polio, hepatitis and measles but not DPT and BCG. Thus we can say that strengthening of health education activities and proper motivation specially mothers by health care workers can definitely improve the awareness and thereby improve the immunization coverage. Female education alone can solve this purpose.

## Conclusion

Among the routine vaccines under 1 year of age, children were least likely to receive OPV/DPT 3rd dose and measles vaccine. Mother's education significantly influences the immunization coverage among the under-fives. Sex of a child had no significant association

with immunization coverage in 1-5 year children.

## Contributor Statement

All the authors were involved in data collection and patient management. VC and MT performed the literature search and wrote the manuscript. All the authors have read and approved the final manuscript.

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**Conflict of Interest:** None

## References :

1. National Family Health Survey. (NFHS-3) 2005-06 India. Volume I September. Available at URL: <https://dhsprogram.com/pubs/pdf/FRIND3/FRIND3-Vol1AndVol2.pdf> Accessed on 13th August 2015
2. Wadgave HV, Pore PD, Missed opportunities of immunization in under-fives in adopted area of Urban Health Centre. *Ann Trop Med Public Health* 2012;5:436-40.
3. Yadhav RJ, Singh P. Immunization status of children and mothers in the state of Madhya Pradesh. *Indian J Community Med* 2004;29:147-8
4. Prabhakaran Nair TN, Varughese E. Immunization coverage of infants-Rural-Urban difference in Kerala. *Indian Pediatr.* 1994;31:139-43.
5. Nath B, Singh JV, Awasthi S, Bhushan V, Kumar V, Singh SK. A study on determinants of immunization coverage among 12-23 months old children in urban slums of Lucknow district, India. *Indian J Med Sci*, 2007;61:598-606.
6. Mathew JL, Babbar H, Yadav S. Reasons for non-immunization of children in an urban, low income group in North India. *Trop Doct* 2002;32:135-8.
7. Kumar D, Aggarwal A, Gomber S. Immunization status of children admitted to a tertiary-care hospital of north India: Reasons for partial immunization or non-immunization. *J Health Popul Nutr.* 2010;28:300-4.
8. Manjunath U, Pareek RP. Maternal knowledge and perceptions about the routine immunization programme -a study in a semiurban area in Rajasthan. *Indian J Med Sci* 2003;57:158-63.
9. Bhandari B, Mandowasa SL, Gupta GK. Evaluation of vaccination Coverage. *Indian J Pediatr* 1990;57:197-201.
10. Nirupam S, Chandra R, Srivastava VK. Sex bias in immunization coverage in the urban area of U.P. *Indian Pediatr* 1990;27:338-41.
11. Mathew JL. Inequity in Childhood Immunization in India: A Systematic Review. *Indian Pediatr* 2012;49: 203-22.

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