

## Original Article

# CORRELATES OF DELAYED IMMUNIZATION: A CROSS SECTIONAL STUDY AT A TERTIARY CARE CENTRE OF MAHARASHTRA, INDIA

Vimal M Holambe<sup>1</sup>, Namrata A Thakur<sup>2</sup>**Financial Support:** None declared**Conflict of interest:** None declared**Copy right:** The Journal retains the copyrights of this article. However, reproduction of this article in the part or total in any form is permissible with due acknowledgement of the source.**How to cite this article:**

Holambe VM, Thakur NA. Correlates of Delayed immunization: A cross sectional study at a tertiary care centre of Maharashtra, India. Natl J Community Med 2013; 4(4): 621-3.

**Author's Affiliation:**

1Assistant Professor and Head;  
2Epidemiologist cum lecturer, Department of Preventive and Social Medicine, Government Medical College, Latur (M.S) India

**Correspondence:**

Dr Vimal Holambe,  
Email: drnandini\_dole@rediffmail.com

**Date of Submission:** 22-09-13**Date of Acceptance:** 18-11-13**Date of Publication:** 31-12-13

## ABSTRACT

**Introduction:** Immunization programme is one of the most cost-effective public health measures. Even though vaccines are provided at all the government health care centres free of cost, the immunization coverage in India is low. Even amongst these immunized children there appears to be a delay in vaccination of the child.

**Aim:** Present study was conducted to assess the reasons for delay in immunization of infants and determine the factors influencing the timeliness of vaccination.

**Methodology:** A cross sectional study was conducted in Government Medical College, Latur(Maharashtra) during May 2013 to June 2013. The study population consisted of 197 mother-infant pairs attending the Immunization Clinic. Data was collected by direct interview using pre-designed and pretested questionnaire.

**Results:** Out of the 197 study subjects, 67(34%) had presented late for immunization. The most common reason for late presentation was that "the family was out of place" on the scheduled day of vaccination. Age of mother at marriage and parity were found to be statistically significantly associated with delayed immunization.

**Conclusions:** Age of mother at marriage and parity are significantly associated with delayed immunization.

**Key words:** immunization, timeliness, correlates, infants.

## INTRODUCTION

Universal Immunization Programme (UIP) was introduced in India in 1985-86 for complete immunization of the children.<sup>1</sup> The aim of routine immunization programme is to deliver a complete number of doses of potent vaccines in a timely, safe, and effective way to all children and women.<sup>2</sup> Immunization programme is one of the most cost-effective public health measures and an important component of the primary health care services.<sup>3</sup> Besides, the reduction of the vaccine preventable diseases, the positive impact of immunization programme is also likely to be reflected in related programmes of maternal and child health and family planning.<sup>3</sup> Even though vaccines are provided at all the government health care centres free of cost, even at the village level, the immunization coverage in India is as low as 46% for primary immunisation.<sup>4</sup> However even amongst these immunized children there appears to be a delay in vaccination of the child. Studies have shown that delayed and incomplete administration of vaccines increases the risk of vaccine

preventable diseases, thereby increasing mortality and morbidity.<sup>5</sup>

## OBJECTIVE

Present study was conducted to assess the reasons for delay in immunization of children below one year of age and determine the factors influencing the timeliness of vaccination.

## METHODOLOGY

Present cross sectional study was conducted in Government Medical College, Latur (Maharashtra, India). It was decided to enroll all the mother infant pairs attending immunization clinic over a period of 1 month. The study period was from 1<sup>st</sup> May 2013 to 30<sup>th</sup> June 2013.

The study was planned with purposive sampling, in which 197 mothers were interviewed during the study period. Informed consent was obtained from mothers.

Response rate was 100%. Predesigned and pretested questionnaire was used as a tool for data collection.

The study variables included were age of mother, education and occupation of parents, socioeconomic status, age at marriage, parity and spacing. Delayed immunization was considered when the child was brought > 7 days after the scheduled date of vaccine.<sup>5</sup> Reason for late presentation to hospital was also noted.

Socioeconomic status of the study subjects was assessed by modified Kuppuswamy's classification with CPI for the month of May as 231.<sup>6</sup> Mean and standard deviation were calculated for continuous data. Categorical data was analysed using percentage and chi<sup>2</sup> test. The data was analyzed using software SPSS version 20.

Ethical clearance was obtained from local institutional ethical committee.

## RESULTS

Out of the 197 infants 101(51.27%) were males and 96 (48.73%) were females. The age range of infants was from 1 day to 12 months. The mean age of mothers was 24.17 years (SD=3.60 years). Majority of the parents had at least secondary school education with one fourth of the mothers and one third of the fathers having education upto graduation and above. 91.37% mothers were housewives while main occupation of fathers was clerical/shop owner/farmer (32%) followed by unskilled labourers (25%).Majority of the families belonged to class IV Socioeconomic status (44.66%) by Modified Kuppuswamy's Classification. 17% of the mothers were married at <18 years of age. More than half of the mothers (58.37%) married between the age of 18-21 years. Of all the mothers, 103 (52.28%) were primiparous and 94 were multiparous (47.72%).

Out of the 197 study subjects, nearly one third i.e. 67(34%) had presented late for immunization. The most common reason for late presentation was that "the family was out of place" on the scheduled day of vaccination. The next common reason was "baby was ill". The nature of illness was asked on history and it was noted that all of them were having minor illness like cold, cough etc. Other common reasons were "Parents were busy with other work", "Parents had forgotten the date". (Table 1)

**Table 1: Reasons for delayed immunization in infants**

Reason for delay	Infant (%)
Parents were out of place	18 (26.86)
Baby was ill	15 (22.39)
Parents were busy with other work	12 (17.91)
Parents had forgotten the date	12 (17.91)
Baby was underweight	8 (11.94)
Parents lost the immunization card	2 (2.99)

Age of mother at marriage and parity were found to be statistically significantly associated with delayed immunization. Primiparous mothers tend to come timely for immunization as compared to multiparous mothers.

The women who are married early, i.e. at ≤ 18 years of age tend to come late for immunization of their children as compared to those of > 18 years. All other variables including sex of child, age of mother, education of the parents, socioeconomic status and spacing were not significantly associated with delayed immunization. (Table 2)

**Table 2: Factors associated with delay in immunization**

	Presentation for Immunization		χ <sup>2</sup> , df	P value
	Timely	Late		
<b>Sex of child</b>				
Male	61(46.92)	35(52.24)	0.50, 1	0.479
Female	69(53.08)	32(47.76)		
<b>Age of mother</b>				
≤19	12(9.23)	03(4.48)	1.50, 3	0.681
20-25	83(63.85)	44(65.67)		
26-30	27(20.77)	15(22.39)		
>30	08(6.15)	05(7.46)		
<b>Education of mother</b>				
Illiterate	01(00.77)	03(04.78)	2.57, 2	0.276
Primary	01(00.77)	02(02.99)		
Secondary	55(42.31)	32(47.76)	36(27.69)	13(19.40)
HSC/Diploma	37(28.46)	17(25.37)		
Graduate & above	36(27.69)	13(19.40)		
<b>Education of father</b>				
Illiterate	03(02.31)	02(02.99)	0.91, 2	0.635
Primary	01(00.77)	01(01.49)		
Secondary	43(33.08)	25(37.31)	45(34.61)	19(28.36)
HSC/Diploma	38(29.23)	20(29.85)		
Graduate and above	45(34.61)	19(28.36)		
<b>Socioeconomic status</b>				
I	02(01.54)	02(02.99)	3.02, 2	0.221
II	26(20.00)	06(08.95)		
III	44(33.85)	28(41.79)	31(46.27)	10(14.92)
IV	58(44.61)	30(44.78)		
V	00(00.00)	01(01.49)		
<b>Age of mother at marriage</b>				
≤18	40(30.77)	31(46.27)	4.61, 1	0.0318
19-21	54(41.54)	23(34.33)		
22-25	33(25.38)	10(14.92)	03(02.31)	03(04.78)
>25	03(02.31)	03(04.78)		
<b>Parity</b>				
1	76(58.46)	27(40.30)	5.85, 1	0.016
2	42(32.31)	30(44.78)		
3	10(07.69)	10(14.92)	02(01.54)	00(00.00)
4	02(01.54)	00(00.00)		
<b>Spacing* (denominator is 54 and 40 respectively)</b>				
<3	19(35.19)	16(40.00)	0.23, 1	0.63
3-6	29(53.70)	21(52.50)		
>6	06(11.11)	03(07.50)		

## DISCUSSION

In spite of immunization services being available in even the remotest part of the country and that too at free of cost, the mothers are bringing their children late for vaccination. In the present study, out of the 197 study subjects, 67(34%) had presented late for immunization.

Age of mother at marriage  $\leq 18$  years and primiparity were found to be statistically significantly associated with delayed immunization in the present study. All other variables including sex of child, age of mother, education of the parents, socioeconomic status and spacing were not significantly associated with delayed immunization.

Dyavarishetty et al<sup>5</sup> in their study in Mumbai noted that, with increasing birth order ( $>2$  births), the proportion with delayed vaccination was 21.4% as compared to 16% with birth order 1 and 2. It appears that the women become more negligent as the birth order increases. Patel et al<sup>7</sup> in their study in Gujarat also found association of higher birth order with missing immunization sessions. While Nilanjan Patra et al<sup>3</sup> also observed same effect with higher birth orders. Similar association was found in present study with parity.

Nilanjan Patra et al<sup>3</sup> also noted that delay in vaccination was common after 26 years of age. Islam et al<sup>8</sup> observed in his study that likelihood of vaccination decreases for the mothers' older than 28 years. No such association was found with age of mother in present study.

Dyavarishetty et al<sup>5</sup> noted that there has been a delay in vaccination of female children for all vaccines. However in the present study, no difference with respect to sex of child was found.

Dyavarishetty et al<sup>5</sup> and Nilanjan Patra<sup>3</sup> found that education of the mother influences the uptake of timely vaccination, but in present study no such findings were noted.

The most common reason for late presentation was that "the family was out of place" on the scheduled day of vaccination. Parents forgetting the date of vac-

ination was the most common reason noted by Patel et al<sup>7</sup> while it was also the third common cause in present study.

## CONCLUSIONS

The present study reveals that proportion of delayed vaccination was nearly one third with "the family was out of place" being the most common reason. Primiparity and age of mother at marriage  $\leq 18$  years are significant determinants of delayed immunization.

## REFERENCES

1. K Park. Park's Textbook of Preventive and Social Medicine. 21<sup>st</sup> Ed, 2011: 404.
2. 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
3. Nilanjan Patra. Universal Immunization Programme in India: The determinants of childhood immunization. available from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=881224](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=881224). Accessed on 18-01-2013
4. NFHS -3 data. Available from <http://www.rchiips.org/NFHS/pdf/India.pdf> accessed on 18-01-2012
5. Dyavarishetty P. V. Kowli S. S A Facility Based Study on Timely Immunization of the Infants, in a Health Centre in Mumbai. *Indian journal of maternal and child health*, 2012;15(1):1-8.
6. Labour Bureau. Government of India [internet]. 2010. available from <http://www.labourbureau.nic.in/indum.htm>
7. Tushar A Patel, Niraj B Pandit. Why infants miss vaccination during routine immunization sessions? Study in a rural area of Anand District, Gujarat. *IJPH*, 2011;55(4):321-23.
8. Islam, S.M.S. and Islam, M.M.. Influences of Selected Socio-economic and Demographic Factors on Child Immunization in a Rural Area of Bangladesh. *Demography India*, 1996; 25(2): 275-83.