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A CROSS SECTIONAL STUDY ON VACCINATION COVERAGE OF CHILDREN IN THE URBAN SLUMS OF MUZAFFARPUR, BIHAR

Community Medicine

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ABSTRACT

Background: Immunization is one of the most cost-effective measures in public health to date, preventing at an approximately 2--3 million fatalities in young children every year. Despite their public health benefit, vaccination programs face obstacles.

Objectives: The objectives of the study were to determine the vaccination coverage among the children in urban slums in Muzaffarpur and to determine the factors associated with partial immunization.

Methodology: A community based cross-sectional study was conducted from November 2020 to October 2021 on children aged 12 to 23 months old of Muzaffarpur, Bihar, the urban slums area under Department of Community Medicine, Sri Krishna Medical College, using 30-cluster survey method. Information regarding immunization status, socio demographic and personal details was collected using pretested semi structured questionnaire after obtaining the consent. RESULTS: Among 240 children, Male children constituted 53.7%. and female children to 46.3%. Full immunization coverage was 82.9% and Partial immunization coverage was 17.1%. The relation between socio demographic variables like religion, type of family, total number of children in family, birth order, place of delivery, father's and mother's educational status, socio economic status and immunization status was found to be statistically significant.

Conclusion: The overall Immunization coverage factors found in this study are illiterate father, illiterate mother, low socio economic status, no exclusive breast feeding and non-availability of immunization card were determinants of partial immunization.

KEYWORDS

Immunization, Vaccination coverage, children, urban slum

INTRODUCTION

Immunization is the process of development of protective response of an individual's body to a specific disease by introducing an immunizing agent. Immunizing agents may be classified as vaccines, anti-sera and immunoglobulins (Igs). Vaccine is an immuno-biological substance designed to produce specific protection against a given disease. It stimulates the production of protective antibody [1]. Immunization coverage is the most important strategy adopted by child survival programs throughout the world. Roughly three million children die each year of vaccine preventable diseases, with a disproportionate number of these children residing in developing countries [2].

Widespread use of vaccines has prevented millions of premature deaths, paralysis, blindness, and neurologic damage [3]. despite their public health benefit, vaccination programs face obstacles. One obstacle is public perception of the relative risks of vaccination. Vaccine scares and sudden spikes in vaccine demand remind us that the effectiveness of mass vaccination programs is governed by the public perception of vaccination[4]. Each individual and family weigh perceived risks and benefits, reflect on the value of participation, and consider potential consequences of vaccination[5]. This study was initiated in order to determine the vaccination coverage among the children in urban slums in Muzaffarpur, Bihar and to determine factors associated with partial immunization.

MATERIALS AND METHODS

The present study was a community based cross-sectional study conducted in urban slums area of Muzaffarpur, Bihar, the urban slums area under Department of Community Medicine, Sri Krishna Medical College. The study population consisted of all the children aged between 12-23 months in notified urban slums in Muzaffarpur. Inclusion criteria were all the children between 12-23 months of age and children who were resident of that area since birth. Exclusion criteria were children from migrant families and children of parents who are not willing to give consent. The study was conducted for a period of one year (November 2020 to October 2021).

A total of 240 children aged 12-23 months were included in the present study, sample Size was based on WHO's 30 cluster survey method for immunization. 30-cluster survey method was utilized. WHO recommends this method for rapid estimation of immunization coverage in children, using a linear systematic sampling technique proportional to the population size. Fully immunized, Children who had completed the recommended EPI immunization schedule of BCG, OPV, DPT and Measles-rubella (MR) vaccine before one year of age. Partially Immunized: A child who was not yet fully immunized (i) partially immunized but up to age. (ii) Partially immunized but not up to age. Unimmunized: Child who had not yet received any vaccine for the age, though eligible. Socio-economic status in the present study, socio-economic status was assessed using Modified Kuppuswamy scale 2014 [6].

RESULT

In the present study, among 240 children, highest proportion of children were in the age group of 21 months (10.5%) followed by 18 months (10.0%), 15 months (9.5%) & 22 months (9.5%). Few (7.5%) children were in the age group of 13 months. Male constituted 53.7% and female children to be 46.3%. In this study, 63.3% of children belonged to Hindu religion, 30% to Muslim religion and 6.7% belong to Christian religion. Nearly 70% of children belong to family having up to 5 members and 30% belong to family having members more than five. 65% of children belong to Nuclear family, 22.5% to joint family and 12.5% to three generation family It was found that, 59% were from family with two children, 11.4% of were from family with three children, 3.8% were from family having total children of four. 25.7% of study children were from family with only one child. Nearly more than 50% of children were of second birth order, 33.3% of children were of first birth order, 10% were of third birth order and 3.3% of children were of fourth birth order.

In this study, it was revealed that 73.8% of deliveries was conducted in government hospitals and 26.2% at Private hospital. 21.9% of

children's fathers were illiterate, 10.0% had education up to primary,19.5% to middle school, 37.1% to high school,8.1% to PUC/Diploma and 3.3% of children's fathers were graduates. With regard to their occupation, 7.6% were unemployed, 35.2% were unskilled, 5.2% were semi-skilled, 36.7% of children 's fathers were skilled, 7.1% were Shop/clerical/farmers, 7.6% were Semi profession and 0.5% belonged to professional job. With respect to the children's mother's educational status, 15.7% of children's mothers were illiterate. Majority of them had studied up to high school and middle school i.e. 35.7% and 29% respectively. Very few had studied till PUC and graduation. 61.4% of mothers were unemployed, 33.8% were unskilled and very few were in some other occupation. According to modified Kuppuswamy SES classification highest proportion of children belonged to upper lower (49.5%) followed by lower middle (36.7%), lower (7.6%) and upper middle socioeconomic status (6.2%).

Table:1: Distribution Of Children Based On Vaccination Status

Vaccine	Frequency (%)
BCG	235 (97.9%)
OPV 0	234 (97.5%)
OPV and Pentavalent 1	231 (96.2%)
OPV and Pentavalent 2	221 (92.1%)
OPV and Pentavalent 3	214 (89.1%)
MR1	201 (83.7%)
MR2	182 (75.8%)

Table 2: Distribution Of Children Based On Immunization Status

Immunization status	Frequency (%)
Fully immunized	199 (82.9 %)
Partially immunized	41 (17.1%)
Total	240 (100 %)

Among fully immunized children, 53.5% were male and 46.5% were female. Among partial immunized children, 54.8% were male and 45.2% were female children. The relation between gender and immunization status was not found to be statistically significant. The relation between socio- demographic variables like religion, type of family, total number of children in family, birth order, place of delivery, father's and mother's educational status, socio-economic status and immunization status was found to be statistically significant.

Table 3: Relation Between Socio Demographic Variables And Immunization Status (N=240)

Variable	Immunization status	
	Partially immunized (%)	Fully immunized (%)
Gender		
Female	19 (17.1)	92 (82.9)
Male*	23 (17.8)	106 (82.2)
Religion		
Christian	4 (25)	12 (75)
Muslim	20 (27.7)	52(72.3)
Hindu*	17 (11.2)	135 (88.8)
Type of family		
Three generation	13(43.3)	17 (56.7)
Joint	11 (20.4)	43 (79.6)
Nuclear*	19 (12.2)	137 (87.8)
No of children		
>2	14 (33.3)	28 (66.7)
≤2*	29 (14.3)	174 (85.7)
Birth order		
>2	13 (34.2)	25 (65.8)
≤2*	28 (13.8)	174 (86.2)
Place of delivery		
Private	21 (33.3)	42 (66.7)
Government*	22 (12.4)	155 (87.6)
Immunization card		
No	22 (73.3)	8 (26.7)
Yes*	25 (11.9)	185 (88.1)
Mother's literacy status		
literate	20 (10.5)	179 (89.5)
illiterate*	23 (56.1)	18 (43.9)
Father's literacy status		
literate	17 (9.1)	170 (90.9)
illiterate*	24 (45.2)	29 (54.8)
Mother's occupation		
unemployed	20 (20.8)	76 (79.2)
employed*	25 (17.4)	119 (82.6)
Socio economic status		
V	10 (62.5)	6 (37.5)
IV	21 (20.2)	83 (79.8)
III	4 (5.2)	73 (94.8)
II	0 (0.0)	100)

*Reference group

DISCUSSION

Immunization is one of the most cost effective public health interventions, which is directly or indirectly responsible to prevent the bulk of mortalities in under-fives [7]. Immunization reduces the morbidity and mortality in children. Present study was carried out to find out the factors responsible for partial immunization. In the present study, we observed that in case of partial immunization, most of mothers were either illiterate or having education up to primary school. This result was in accordance to previous studies [8, 9]. In present study, most of children (82.9%) were completely immunized, this data is slightly lower than the expected goal of 85% coverage. Reports of NFHS-III revealed that only 54.7% of the urban children are fully vaccinated [10] We observed that observed between the educational status of mother and socioeconomic status of families of children regarding the immunization status of children. Previous studies revealed that there was significant association of mother's education, religion, socioeconomic status in respect to the immunization status of children [11].

CONCLUSION

In present study, most (82.9%) of children were completely immunized. There was significant association between educational status of mother and socioeconomic status of family with immunization status of children. In present study, we observed that there were some pockets in slum areas where immunization to children was very poor. We have opinion that there should be re-review of current strategies of immunization in country like India to ensure complete immunization coverage to each and every child.

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