www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v6i3.80

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

A Study to Assess the Factors Determining the Complete and Partial Immunization among Infants in Guwahati

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Abstract
A cross sectional study conducted to assess the factors influencing the immunization of children between twelve to twenty three months at medical college Guwahati from Jan 2014 to July 2014. Results observed were socioeconomic status and literacy status of parents are important determinant. Hindus being better immunized (67%) compared to other religions, family size and number of children is inversely related to immunization coverage (25% for 4th child). Instituitional deliveries have a positive impact (65.3% and 80.9%). Conclusion- to reach the target level of immunization coverage social evils like gender bias and religious barriers need to be overcome. Educational opportunities should be made universal with improvement in employments resulting in better socioeconomic status of the community. To increase awareness about need and benefits of family planning is the central pillar in achieving complete immunization coverage.

Introduction

Immunization is one of the most important public health interventions for protection of children. It is the most cost effective measure and needs involvement from the community. Immunization not only result in improvements in health and life expectancy but also have the social and economic impact at both community and national levels. Complete coverage also decreases the need for further immunization in the form of Herd immunity. With the population explosion and problems such as illiteracy and poverty various diseases are on rise in India, the need for national immunization schedule arose to reduce disease burden from 6 communicable killer diseases like tuberculosis, polio, diphtheria, measles, tetanus and pertussis.

In India immunization is offered free of cost by the government under Universal Immunization Programme (UIP)[1]. But the immunization coverage is still below the target level. According to National Family Health Survey 3 only 44% of children between 1-2 years receive complete vaccination. Hence this study was conducted in Guwahati medical college to assess the coverage of immunization and factors affecting the same among children between twelve to twenty three months age group.

Materials and Methods

This is a cross sectional study done at medical college Guwahati, from Jan 2014 and July 2014. The study population included children between the age group of twelve to twenty three months

who visited Guwahati medical college between the specified study period. A total number of 450 children were included and the study was conducted through a questionnaire based interview of parents of these children after informed consent regarding various factors which influence the immunization.Inclusion criteria were Age between twelve to twenty three months, children receiving vaccination against 6 vaccine preventable diseases included in national immunization schedule BCG, OPV, DPT, Hep-B, Measles, Resident of Guwahati, No absolute contraindication to vaccination. Questionnaires were analysed and p value was obtained using computer based software.

Results

Table 1. shows that out of 450 children 246 were males and 204 were females. 65.4% of the males were fully immunized and 34.5% were partially or unimmunized whereas it was 57.3% and 42.6% for females respectively, emphasizing on better chances of immunization for male child.

S.N.	Sex	Fully immunized	Partially/ unimmunized	Total
1	MALE	161 (65.4%)	85(34.5%)	246
2	FEMALE	117(57.3%)	87(42.6%)	204
	TOTAL	278	172	450

Table 2 shows immunization status among various religions. Among the study group of 450 children selected 67.1% of Hindus, 52.1% Muslims, 64.3% Christiansand 37.5% belonging to other religions were fully immunized. P value of 0.001 was significant.

S.N.	RELIGION	Fully immunized	Partially/unimmunized	Total
1	HINDU	193(67.01%)	95(32.9%)	288
2	MUSLIM	73(52.1%)	67(47.8%)	140
3	CHRISTIAN	9(64.3%)	5(35.7%)	14
4	OTHERS	3(37.5%)	5(62.5%)	8
	Total	278	172	450

Table 3. comparesimmunization status between different socioeconomic groups of society based on modified kuppuswamy socioeconomic scale. Completion of immunization increased as the socioeconomic status improved. Fully immunized children from class I to V were 85.7%, 70.06%, 65.1%, 52% and 26.3% respectively. P value of 0.0001 was found to be significant.

S.N.	CLASS	Fully immunized	Partially/unimmunized	Total
1	Class I	6(85.7%)	1(14.2%)	7
2	Class II	103(70.06%)	44(29.9%)	147
3	Class III	99(65.1%)	53(33.5%)	152
4	Class IV	65(52%)	60(48%)	125
5	Class V	5(26.3%)	14(73.6%)	19
	Total	278	172	450

Table 4. depicts impact of institutional deliveries on immunization status

Institutional deliveries have better chances of completion of immunization (65.3% for govt setup and 80.9% in private setup) as compared home deliveries(29.7%). Partial and unimmunized children were 34.6%, 19.1% and 70.2% in government, private and home setup for deliveries. Calculated p value was highly significant (0.001).

S.N.	Clinical setup	Fully immunized	Partially/unimmunized	Total
1	Government	181(65.3%)	96(34.6%)	277
2	Private	72(80.9%)	17(19.1%)	89
3	Home	25(29.7%)	59(70.2%)	84
	Total	278	172	450

Complete coverage of immunization programme of government depended largely on the literacy status of parents of the child. It was found that illiterate mothers have only 38.7% fully immunized children, 66.5% among mothers who attended school (high school and higher secondary) and 81.5% for mothers with higher education (graduate and post graduate).

Similar group made for fathers showed 86.2% children of fathers having higher education were fully protected by immunization, while this percentage decreased to 62.9% and 28.3% with school education and illiterate fathers respectively. P value was 0.0001 and significant.

Number of children and the order of their birth also affected the immunization coverage. 65.1% of the first born were fully immunized and as the birth order increased the percentage immunization decreased to 62.2%, 48.7% and 25% for 2nd, 3rd and 4th child.

Discussion

As a result of this study it was noted that out of 450 children included in study population 278 received complete vaccination for their age according to national immunization schedule and 172 remained partially/unimmunized. We also came across some factors which significantly affected the complete vaccine coverage.

In the course of our study we observed that male child stand better chance at complete immunization with 65.4% being immunized as compared to females being 57.3%. Our result was supported by study conducted by J.Yadav et al in 2004, statingvaccine coverage levels of males (63.7%) were better than in females (57.1%)[2]

In 2003 Phukan et al, evaluated vaccination status of infants. Complete vaccination was higher among male infants (64.6%) compared to females (59.3%)[3]. The 2009-10 UNICEF survey reported complete vaccination in 61.9% boys and 59.9% girls; the unvaccinated infants were 7.9% and 7.2% respectively[4]

Religious practices and beliefs affect the immunization received by the child in various ways and with such diverse spectrum of religions in our country it is bound to influence the immunization practices. In our study we observed 67.01% of Hindu infants had advantage of full vaccine coverage over 52.1% Muslim and 64.3 % Cristian infants. Phukun etal also reported similar distribution in his study with higher complete vaccination among infants from Hindu households (62.5%) than Muslim households (55.9%)[3]

Borooah et al in 2004, studiedover 4000 children in 16 states, 60% infants from Hindu households were fully vaccinated compared to 40% in Muslim households[5]

In the present study the study population was divided into 5 classes according to socioeconomic status based on modified Kuppuswamy scale (2011)[6]. Socioeconomic status is important factor because it signifies the standard of living, the literacy, the affordability of the family and thus directly affects immunization of the children. Our study stated that immunization was maximum for class I being 85.7% and with decrease in socioeconomic scale immunization too decreased to 70%, 65.1%, 52% and 26.3%. this was supported by study done by Ashwin Dalal et al[7]also Madhuri Inamdar et al in school children of Indore district in 2011[8].

With various national medical facilities like Janani Suraksha Yojana being started by the government the number of institutional deliveries are increasing and so is the immunization coverage. This study showed that the immuniz-ation coverage in private medical setup was 80.9% and 65.3% in government medical setup whereas only 29.7% of the deliveries at home received complete vaccination. These views are in concordance with various other studies like by Chhabra et al, immunization in urbanized villages in Delhi 2007[9]andin urban slums of Lukhnow by Nath et al. found that children born at home were found less likely to receive any vaccination[10].

Education of both the parents is important determinant of immunization coverage as literate parents tend to better understand the need and scientific basis of immunization offered and can

follow immunization schedule more cautiously. Our study showed that complete immunization of children with illiterate mothers was only 38.7% and illiterate father was 28.3%. this increased with the increase educational background to 66.5% and 62.9% for mothers and fathers with basic school education upto higher secondary respectively, and to 81.5% and 86.2% with mother and fathers having higher education (graduate or post graduate) respectively. Phukan et al, reported higher complete vaccination with literate mothers and fathers (68.8% compared to 37.9% among illiterate mothers and 66.3% compared to 35.4% with illiterate fathers)[3].

Caring for multiple children can create a unique barrier to vaccination. There is a strong association between use of immunization service & family planning.The NFHS-3 data showed a trend of declining vaccination with increasing birth order[11]. Our study also showed similar results with 65.1% complete immunization for first born declining to only 25% for forth child.

Conclusion

Our study pointed out that gender bias still exists in immunization as males are better immunized than females, Hindus had better immunization coverage as compared to Muslims and Christians, literate parents tend to get better immunization coverage for their child. With this study focusing on decrease in immunization coverage with increasing birth order need for better family planning services is required. With the advent of various medical schemes by government there is a definite improvement in the vaccine coverage but even more focus to be made towards family planning, improving literacy status and eradicating unemployment to in turn improve the socioeconomic status and hence improving the immunization status.

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