

Original Research Article

Influence of Education and Socioeconomic Status on Immunisation Status of Children in Rural Areas of Dakshina Kannada District of Karnataka

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ABSTRACT

Objectives:

- 1) To assess the immunisation status of children aged 6 to 48 months residing in Bantwal Taluk of Dakshina Kannada district, Karnataka
- 2) To assess the educational and socioeconomic status of the parents of the study population and to determine its effect on the immunisation status of the children

Materials and Methods: Four-hundred and sixty children aged 6 month to 48 months who attended health camps held in 7 villages of Bantwal Taluk of Dakshina Kannada district were included in the study. The data regarding age, sex, religion, immunisation status, optional vaccination, socioeconomic status, mothers and fathers education was collected from parents using a semi-structured questionnaire using interview method and from the immunisation cards. A child who had missed any of the vaccinations according to the National Immunisation Program was classified as partially immunised while those who had not received any vaccination or those who had received only BCG and Pulse Polio vaccines were classified as non-immunised.

Results: Of the 460 children, 95.7% were fully immunised according to the national immunisation schedule, while the rest were partially immunised. But only 2.6 % of the children had taken any optional vaccines. Majority of the population (78.5%) belonged to lower middle socioeconomic class (Kuppuswamy Class 3). Immunisation status was not significantly related to socioeconomic status as the percentage of children who were fully immunised were equally high in both upper and lower socioeconomic class ($p=0.315$). Educational status of the father and the mother were significantly related to immunisation status ($p<0.001$).

Conclusions: The status of immunisation of children in the rural areas of Dakshina Kannada is exceptionally good. With the widespread implementation of the national immunisation program, education plays a significant role in improving the immunisation status of our children.

Key Words: Child, Immunisation, Education, Socioeconomic status, Dakshina Kannada

INTRODUCTION

Immunisation is one of the most cost effective public health interventions to decrease childhood morbidity and mortality. Worldwide 6.9 million babies under the age of 5 years die every year. ⁽¹⁾ A significant proportion of these deaths are attributable to vaccine-preventable infectious diseases such

as Hemophilus influenza B (Hib), Measles, Pertussis and Tetanus. ⁽²⁾ WHO estimated that 17% of global annual under-5 mortality could be prevented through increasing routine vaccination coverage. ⁽³⁾

India has one of the lowest immunisation rates worldwide despite a long standing Universal Immunization

Program (UIP) that provides free childhood vaccines. ⁽¹⁾ The Indian government's universal immunisation program provides vaccines against six diseases to all infants free of charge: one dose of Bacillus Calmette Guerin (BCG), three doses of Diphtheria-Pertussis-Tetanus (DPT), three doses of Oral Polio Vaccine (OPV) and one dose of Measles-containing vaccine. ⁽⁴⁾ The most recent data on vaccine preventable mortality in India is from a 2008 study, which estimated that of the 826,000 deaths in children aged 1-59 months, almost three-quarters were due to vaccine preventable diseases. ⁽³⁾

Indian children who receive all recommended doses of the four UIP vaccines are considered fully vaccinated by WHO; a child lacking any of the recommended doses is considered under-vaccinated, and children who have not received any vaccinations are considered non-vaccinated. The Indian government's nationally representative District Level Household and Facility Survey 2008 (DLHS3) reported that only 54% of children aged 12-23 months were fully vaccinated, 41% were under-vaccinated, and the remaining 5% were non-vaccinated. ⁽⁵⁾ However significant variations exist across the 34 Indian states and union territories.

Reasons for lack of immunisation vary from logistic ones to those dependent on human behaviour. Numerous factors have been studied including gender, age, birth order, family size, household income, religion, caste and maternal education.

Very few studies have been undertaken regarding immunisation among children in Dakshina Kannada district of Karnataka. The present study was undertaken to determine the status of immunisation among the study population and its relationship with socioeconomic status and parental education .particularly maternal education.

MATERIALS AND METHODS

A community based cross sectional study was undertaken in 7 villages of

Bantwal taluk of Dakshina Kannada district of Karnataka in the months of October-November 2015. The villages included Bantwal, Kurnadu, Mani, Manchi, Navooru, Pudu and Sajipanadu. The data was collected through health camps conducted in the villages by the Pediatric department of Yenepoya Medical College.

Four hundred and sixty children between the ages of 6 months and 48 months were included in the study. Data was collected using a pre-designed, semi structured questionnaire which included questions regarding age of the child, sex, immunisation status, optional vaccination, socioeconomic status, mothers and fathers education. Interview method was used for collection of data from the parents preferably mothers and vaccination status was verified by cross checking the immunisation cards when available. Informed consent was taken from the interviewed subjects.

Children who had received all the vaccines according to National Immunisation Schedule (NIS) according to age were classified as fully immunised. ⁽⁶⁾ Children who had missed even one of the vaccines in the NIS were classified as partially immunised and those who had not received any vaccination or those who had received only BCG and Pulse Polio vaccines were classified as non- immunised. Parents education and socioeconomic status was recorded using Kuppuswami scale. ⁽⁷⁾

Statistical analysis was done using SPSS version 14. The p-value of <0.05 was considered significant. Chi-square test was done to determine the statistical significance of the association between immunization status and other factors.

The study was approved by the ethical committee of Yenepoya Medical College, Mangalore. Informed consent was taken from the parents of the study subjects.

RESULTS

Out of the 460 children in the study, 226 (49.1%) were boys and 234 (50.9%) were girls. The mean age was 1.87 years.

Among the children, 440 (95.7%) were fully immunised and 20 (4.3%) were partially immunised. None of the children were unimmunised. Only 12 (2.6%) out of the 448 children in the study had received optional vaccination. Out of the 12 children, 10 had received MMR (measles, mumps

and rubella) vaccine and 2 had received varicella vaccination.

According to Kuppuswamy classification, 78.5% belonged to Lower Middle Class (Class 3). 6.7% belonged to Upper Middle Class (Class 2) and 14.8% belonged to the Upper Lower Class (Class 4).

Table 1: Relationship of immunization status with socio-economic and demographic factors.

Variable	Completely Immunized (N=440)		Partially Immunized (N=156)		Total (100%)	P-Value
	No	%	No	%		
Sex						
Male	217	96.0	9	4.0	226	0.706
Female	223	95.3	11	4.7	234	
Socioeconomic Status						
Upper middle class	28	90.3	3	9.7	31	0.315
Lower middle class	347	96.1	14	3.9	361	
Upper lower class	65	95.6	3	4.4	68	
Father's Education						
Professionals	1	100	0	0	1	<0.001
Graduate/postgraduate	27	93.1	2	6.9	29	
Intermediate	48	94.1	3	5.9	51	
High school	220	100	0	0	221	
Middle school	134	91.8	12	8.2	146	
Primary school	10	100	0	0	10	
Illiterate	0	0	3	100	3	
Mother's Education						
Professionals	1	33.3	2	66.6	3	<0.001
Graduate/postgraduate	26	100	0	0	26	
Intermediate	45	95.7	2	4.3	47	
High school	183	94.8	10	5.1	193	
Middle school	167	100	0	0	167	
Primary school	18	85.7	3	14.3	21	
Illiterate	0	0	3	100	3	

Table 1 shows the relationship of immunisation status with gender, socioeconomic status as well as parental education. There is no significant difference in the immunisation status between boys and girls with 96% (n=217) of the boys being fully immunised and 95.3% (n=223) of the girls being completely immunized.

Surprisingly, a higher percentage of children belonging to lower socioeconomic group had received complete immunisation, with 95.6% among those belonging to Kuppuswamy class 4 being fully immunised, 96.1% among Kuppuswamy class 3 and 90.3% among Kuppuswamy class 2. The association between immunisation status and socioeconomic status was not statistically significant (p=0.315).

Immunisation status of children improved as the mother's education level

increased. It was revealed by the fact that 85.7%, 100%, 94.8%, 95.7% and 100% children of mothers educated upto primary, middle school, high school, intermediate and graduation/post graduation level respectively had completed their immunisation. This positive association between immunisation status of children and level of education of their mothers were statistically significant (p<0.001). Similarly it was seen that the immunisation status of children improved with increased education level of the father also. The relationship between immunisation status of children and fathers education was also statistically significant (p<0.001).

Table 2 shows the relationship of optional vaccination with socioeconomic status and parental education. There was a statistically significant relationship between socioeconomic status and optional

vaccination with 9.7%, 1.9% and 2.9% of children belonging to Kuppaswamy Class 2, Class 3 and Class 4 receiving optional vaccination respectively. (p=0.034).

Mother's education and optional vaccination were also significantly

correlated with 1.8%, 2.1% and 10.6% of the children whose mothers were educated up to intermediate, high school and middle school respectively had received optional vaccination.

Table 2: Relationship of optional vaccination with educational status of parents

Variable	Optional vaccination given		Optional vaccination not given		Total (100%)	P-value
	No.	%	No.	%		
Socioeconomic Status						
Upper middle class	3	9.7	28	90.3	31	0.034
Lower middle class	7	1.9	354	98.1	361	
Upper lower class	2	2.9	66	97.1	68	
Father's Education						
Professionals	0	0	0	0	0	0.127
Graduate/postgraduate	0	0	29	100	29	
Intermediate	2	3.9	49	96.1	51	
High school	10	4.5	211	95.5	221	
Middle school	0	0	146	100	146	
Primary school	0	0	10	100	10	
Illiterate	0	0	3	100	3	
Mother's Education						
Professionals	0	0	3	100	3	0.03
Graduate/postgraduate	0	0	26	100	26	
Intermediate	5	10.6	42	89.4	47	
High school	4	2.1	189	97.9	193	
Middle school	3	1.8	164	98.2	167	
Primary school	0	0	21	100	21	
Illiterate	0	0	3	100	3	

DISCUSSION

Immunisation is the most cost effective child health intervention. India's immunisation coverage remained unacceptably low in 2008, with slightly more than half of all children aged 12-36 months vaccinated with UIP recommended vaccines and the remainder either under vaccinated or not vaccinated at all. This translates into a very large number of children being at elevated risk for vaccine preventable diseases, which partially explains the continued high burden of morbidity and mortality from such diseases in Indian children.

The Indian government launched the National Rural Health Mission in 2005, which resulted in substantial improvements in immunisation service delivery. (8) More recently the Indian Government declared in 2012 that a renewed focus on strengthening routine immunisation services was needed, which was followed by establishment of an Immunisation Technical Support Unit at the public health foundation of India in collaboration with other partners to revamp

the ongoing efforts to improve vaccination coverage. (9)

The present study was conducted to assess the immunisation status among children less than 4 years of age in Dakshina Kannada, Karnataka. Most of the studies conducted earlier in different parts of India showed lower levels of immunisation when compared to the present study. (10,11) This is due to the different level of utilization of immunisation in different parts of India. According to District Level Household Survey- 4, (12) in Karnataka 77.6% of the population was fully immunised. In the same survey, it was found that 86 % of the children were fully immunised in the district of Dakshina Kannada. These values are higher than the national average and comparable to our study.

Similar to the findings of other studies (11,13) in India, no significant difference was observed between immunisation status of boys and girls. This is contrary to the general observation that female children are neglected for their health care especially in developing

countries like India.

Children of literate parents were found to have more chance of completing their immunisation. In our study, father's education was found to be significantly associated with immunisation status with children of better educated fathers being more likely to be fully immunised. Other studies conducted in other parts of India (13,14) has shown similar results with significant difference in immunisation status of children of fathers having different level of education. In our study, mothers' education was also significantly associated with immunisation status which was also reported by other studies from India. (11,13,14,15)

Contrary to other studies which found significant association between immunisation status and socioeconomic status, (14,16) our study showed no significant relation between the immunisation status and socioeconomic status. This could be attributed to the fact that our study population did not have any one from the lowest strata of society (Kuppuswamy Class 5) and more than 78% of the study population was from the lower middle class. (Kuppuswamy class 3). The fact that the majority of parents had a high school education or higher could also have contributed to this finding.

Only a very low percentage (2.6%) had given any optional vaccines even though the overall immunisation status for mandatory vaccines was very high. This emphasizes the need for increasing the awareness among the parents regarding other vaccine preventable diseases and the availability of optional vaccines. Our study also found a significant correlation between socioeconomic status and optional vaccination suggesting that children in higher socioeconomic strata are more likely to take optional vaccine. Optional vaccination was also significantly related to maternal education which highlights the role of female literacy and female education for the utilization of child health services.

CONCLUSION

With the strict implementation of the national immunisation program, promotion of education particularly girls' education and increase in awareness among parents, the immunisation coverage of children can be drastically improved as observed in the above study. But further steps need to be taken to increase awareness about the benefits of optional vaccination and to improve its coverage especially among those who can afford it.

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