## **Original Research Article**

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# Immunization coverage among anganwadi preschool children in Kannur, Kerala, India

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#### **ABSTRACT**

Background: The Government of India launched the Expanded Programme on Immunization (EPI) in 1978 with the objective of reducing the mortality and morbidity resulting from vaccine-preventable diseases of childhood. The Coverage Evaluation Survey by UNICEF in 2009 reported that the percentage of children fully immunized in India is only 61%. The objective of this study was to assess the immunization coverage among preschool children attending Anganwadi in Kannur district.

Methods: Cross-sectional study done during July 2013- June 2014 among Anganwadi pre-school children. Anganwadi centres were selected using multistage random sampling. The data regarding immunization and sociodemographic factors were collected by interviewing the mothers using a standardized questionnaire. Data was entered in Epi Data version 3.1 and analysis was carried out using the Statistical Package for the Social Sciences (SPSS) version 19 software.

Results: In this study 456 preschool children (3-6 years) were studied. Among the study population, 429 children (94.1%) were fully immunized, 25 (5.5%) were partially immunized and 2 (0.4%) were non-immunized. The major reasons for not taking immunization as stated by the respondents were: religious beliefs, personal engagements at the time of immunization, fear of fever after immunization, and that the child had fever at the proposed date.

Conclusions: The present study shows that regular follow up and motivation through systems like Anganwadi can improve immunization coverage. The study also identified that children taking vaccination from government sector are more likely to complete the schedule.

Keywords: Anganwadi, Immunization coverage, Preschool children

#### INTRODUCTION

The Government of India launched the Expanded Programme on Immunization (EPI) in 1978 with the objective of reducing the mortality and morbidity resulting from vaccine-preventable diseases of childhood. Universal immunization programme was launched in India in 1985 with two vital components: immunization of pregnant women against tetanus, and immunization of children in their first year of life against the six EPI target diseases.<sup>1</sup> The coverage evaluation survey by UNICEF in 2009 reported that the percentage of children fully immunized in India is only 61% and that the immunization coverage in India varies between 24.8% in Arunachal Pradesh to 87.9% in Goa and the coverage in Kerala is 81.5%. The purpose of this study was to assess the immunization coverage among preschool children attending Anganwadi in Kannur district, Kerala.

#### **METHODS**

This was a cross-sectional study conducted among preschool children attending Anganwadi centre (AWC) to assess the immunization coverage among them and to identify the factors associated with partial/ nonimmunization. The study was conducted between July 2013-June 2014 in Kannur district. Sample size was obtained as 399 using the formula for cross-sectional studies taking the Kerala immunization coverage 81.5%, with 5% relative precision and 10% non-response rate.<sup>2</sup> The preschool children attending Anganwadi center was chosen as the study population as it would be easy to approach the study population through these centers. The average number of children attending the Anganwadi was estimated to be 10 and hence to attain the sample size and geographical distribution, 44 AWC were selected by multistage random sampling. From the 11 Revenue blocks in Kannur district, 4 Anganwadi centres each were randomly selected using the random number table. The data regarding immunization and socio-demographic factors were collected by interviewing the mothers using a standardized questionnaire. The immunization card was examined where available, otherwise the immunization history obtained from the mothers were cross checked with documents in the AWC.

A child who has taken all the age appropriate vaccines according to the National immunization schedule was considered as fully immunized. A child who has taken some of the recommended vaccines but not all, was considered partially immunized and a child who has not taken any vaccines was considered non-immunized.

Data was entered in Epi Data version 3.1 and analysis was carried out using the Statistical Package for the Social Sciences (SPSS) version 19 software. Statistical measures like mean with standard deviation, frequencies and proportions were used to describe the results. Inferential statistics Chi-square and Fisher's Exact test were used to find the association. P value less than 0.05 was taken as significant.

Ethical clearance was obtained from the Institutional Ethics Committee and Research Committee. The purpose of the study was explained to the mothers and their written informed consent taken. The general health status of the children was assessed by clinical examination and necessary measures including referral were advised. After the study, health education was given to mothers on breast feeding, immunization, antenatal care and nutrition.

#### **RESULTS**

In this study 456 preschool children (3-6 years) were studied. Majority (67.1%) of the children were in the 3-4 year age group (Table 1). Most of the children (72.6%) were from rural area and 27.4% from urban area.

Most of the children were either of the first order or second order of birth (46.5% and 43.6% respectively). Highest birth order was of fifth order (0.7%). More than half (55%) of the mothers had education of high school level. There were no illiterate mothers. Minimum education was middle school level (5%). Mothers with

professional qualification were 0.2%, graduates 21% and diploma 19%. Regarding health care utilization, most of the children were consulting modern medicine practitioners for health care (Table 2).

Table 1: Distribution by major socio-demographic variables.

Variable (N =456)	Frequency (%)	
Age		
3-4 year	306 (67.1)	
4-5 year	124 (27.2)	
5-6 year	26 (5.7)	
Sex		
Male	208 (45.6)	
Female	248 (54.4)	
Religion		
Hindu	293 (64)	
Muslim	151 (33)	
Christian	12 (3)	
Type of family		
Joint family	249 (55)	
Nuclear family	109 (24)	
Three generation family	98 (21)	
Socio-economic status		
(Modified Kuppuswamy scale 2012)		
Upper class	3 (1)	
Upper middle class	93 (20)	
Lower middle class	206 (45)	
Upper lower class	154 (34)	

**Table 2: Distribution by health care utilization.** 

Variable (N =456)	Frequency (%)	
Sector utilized for immunization		
Government sector	417 (91.4)	
Private sector	39 (8.6)	
Place of birth of the child examined		
Government hospital	193 (42)	
Private hospital	263 (58)	
System of medicine followed for needs other than		
immunization		
Modern medicine	390 (85.5)	
Ayurveda	4 (0.9)	
Homeopathy	62 (13.6)	

**Table 3: Distribution by immunization status.** 

Immunization status	Frequency (%)
Fully immunized	429 (94.1)
Partially immunized	25 (5.5)
Unimmunized	2 (0.4)
Total	456 (100)

In the study population, 429 (94.1%) were fully immunized (Table 3).

The major reasons for not taking immunization as stated by the respondents were: religious beliefs (70.4%), personal engagements at the time of immunization (14.8%), fear of fever after immunization (11.1%), and that the child had fever at the proposed date (3.7%).

The present study found that there was significant association between immunization status and religion, type of family, place of immunization (government sector vs. private sector) and place of childbirth (government sector vs. private sector).

The present study did not find any statistically significant association between immunization status and sex of the child, birth order, maternal educational status, paternal educational status, socioeconomic class, area of residence or health system followed for routine health care.

#### **DISCUSSION**

In the present study, 456 children in the three to six year age group were studied. In the study population, 429 (94.1%) were fully immunized for age, 25 (5.5%) were partially immunized and 2 (0.4%) were non-immunized. It was found that 96% of females and 91% of males were fully immunized for age. The immunization coverage in Kannur district during 2007-2008 was 83.4% and in Kerala 79.5%.<sup>3</sup> The good coverage observed in the present study population might be because they are under regular follow up in Anganwadi and hence the defaulters were identified, and advised immunization.

A survey conducted in Thiruvananthapuram district of Kerala by M. C. Vasantha Mallika in 2013, found that out of 210 one to two year old children surveyed, 189 (90%) were fully immunized for age, 21 (10%) were partially immunized for age and no child was unimmunized, and that the partial immunization status had significant association with low socio-economic status.<sup>4</sup>

The present study found that among those who followed Muslim religion, 16.6% were not fully immunized; and among followers of other religion, 0.7% was not fully immunized. This study found that this difference was statistically significant (p <0.0001, Pearson Chi-square test). On analyzing the influence of type of family on immunization status, it was found that 8.4% children from joint family, 4.1% from three generation family and 1.8% from nuclear family were not fully immunized. The present study found that the type of family had a significant influence on the immunization status of the child (p = 0.035, Pearson Chi-square test).

Among those children who took immunization from a government sector, 2.9% were not fully immunized, and among those utilizing private sector for immunization 35.1% were not fully immunized. The present study found that there was a significant association (p value <0.0001, Fisher's exact test) between the sector used for immunization and immunization status. In the present

study, while considering the place of child birth, 9.1% among those born in a private hospital and 1.6% among those born in a government hospital, were not fully immunized. It was found that this difference in vaccination status was statistically significant (p =0.001, Pearson Chi-square test).

In the present study there was no association between immunization status and sex of the child, birth order, maternal educational status, paternal educational status, socioeconomic class, area of residence or health system followed for routine health care. In a study conducted in Rajasthan it was found that 82.1% and 45.1% children were fully immunized in urban and rural areas respectively. The study found that the rate of immunization was similar among males and females. <sup>5</sup>

The major reasons for not taking immunization as stated by the respondents in the present study were: religious beliefs (70.4%), personal engagements at the time of immunization (14.8%), fear of fever after immunization (11.1%), and that the child had fever at the proposed date (3.7%). A survey conducted in Thiruvananthapuram district of Kerala by M. C. Vasantha Mallika in 2013, identified the following factors for partial immunization: lack of awareness regarding the need for vaccination, lack of awareness about the need for second and third doses, lack of awareness regarding the place and time of immunization session, fear of adverse reactions, negative propaganda, child being ill and not taken for vaccination, child taken for vaccination but not given because of illness, lack of vaccine, absence of vaccinator, mother too busy, family problems, ill health of the mother, inconvenient time of vaccination session, immunization site too far to reach.4

In a study conducted in Uttarakhand in 2012 among migrant population, it was found that only 24% of children were fully immunized. The major reasons for partial/ non-vaccination were lack of awareness of the need to vaccinate (92%) and fear of side effects (74%). 6 It was also found that illiteracy among mothers, being Muslim, lack of knowledge of benefits of immunization, mother not being the decision maker for immunization, lack of contact with ASHA and not being informed by ANM/ASHA regarding the next date were the risk factors significantly associated with partial/non immunization. <sup>6</sup> A study conducted in Rajasthan found that failure of immunization in rural areas was mainly due to unawareness of need for immunization (35.4%), mother too busy in 16.8%, place and time not known in 9.7%, place for immunization too far 8.8% and 7.1% each for unaware of need to return for subsequent doses, fear of side reactions and vaccinator absent.<sup>5</sup>

## **CONCLUSION**

The present study shows that regular follow up and motivation through systems like Anganwadi can improve immunization coverage. The study also identified that

children taking vaccination from government sector are more likely to complete the schedule, which might be because of the influence of the multipurpose health workers in educating and motivating the beneficiaries. The good immunization coverage obtained in this study might be a reflection of being under an umbrella of health education and immunization services from the Anganwadi. There are still lacunae in the knowledge regarding the importance of timely immunization, there are misconceptions regarding adverse effects and ignorance about the need to complete the schedule. Repeated health education sessions focusing these factors are needed to further increase the immunization coverage. Improving the coverage of Anganwadi services in low immunization areas will also help to improve the immunization status.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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