



“A STUDY ON MEASLES-RUBELLA IMMUNIZATION STATUS AND FACTORS RELATED TO NON-IMMUNIZATION AMONG 1-2 YEAR CHILDREN OF URBAN FIELD PRACTICE AREA OF KBNIMS, KALABURAGI”

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ABSTRACT

Background: Measles is highly infectious, potentially fatal and mostly affects children. When rubella infection occurs during the first trimester of pregnancy, it affects the embryo in-utero that can cause fetal death. Measles-Rubella vaccination coverage of more than 95% is required to achieve the Measles-Rubella elimination goal in the country. **Objective:** To find out the MR vaccination status among 12-24 months children and to study the factors associated with non- vaccination in urban field practice area of KBNIMS, Kalaburagi. **Methodology:** Cross-sectional study was conducted by doing house to house survey in urban field practice area of KBNIMS, Kalaburagi. Socio-demographic details, MR immunization status and factors related to non-immunization were collected using pre-tested, semi-structured questionnaire. Data was analyzed using Epi-Info 7 software and appropriate statistical tests were applied. Level of significance was set at a P value of <0.05. **Results:** Of the 436 children, 248(56.88%) were males and 188(43.12%) were females. The MR immunization coverage was 87.61%. Statistically significant association of immunization status was found with birth order of the child, socio-economic status, education status of the mother, place of delivery. **Conclusions:** Our findings emphasize the importance of the mother's education, small family and health education through mass media regarding hazards of Measles and Rubella disease and importance of MR immunization.

KEYWORDS : Measles-Rubella; MR Immunization; KBNIMS; Kalaburagi; Urban Field Practice Area;

INTRODUCTION:

Measles is highly infectious, potentially fatal and mostly affects children. In recently conducted case fatality ratio (CFR) studies in Bihar, the measles CFR was observed to be around 1%. Even at this CFR, the mortality burden of measles is high because the un-immunized individuals form a cohort of susceptible for measles infection, that are often of a very young age.⁽¹⁾

Children born to immune mothers are protected against clinical measles from passively acquired maternal antibodies until they are five to nine months of age. More than 90 percent of infections are associated with clinical disease. Complications include pneumonia, diarrhea, encephalitis and blindness, especially in children with vitamin A deficiency.⁽²⁾

Rubella transmission is widespread in the communities across India. Rubella disease is a mild viral infection affecting both children as well as adults in both the sexes. When rubella infection occurs during the first trimester of pregnancy, it affects the embryo in-utero that can cause fetal death in the form of spontaneous abortions and stillbirth. A child can be born with serious congenital anomalies like congenital cataract, glaucoma, cardiac defects, deafness, hepato-splenomegaly, hematological disorder, microcephaly and mental retardation. This can lead to severe lifelong disabilities in the child known as CRS, causing a huge socioeconomic burden to the family in particular and the society in general. The virus is transmitted via the respiratory route, and symptoms usually appear 2–3 weeks after exposure.⁽³⁾

UIP since 1985 that was administered at 9 to 12 months of age, the disease burden had reduced and this reduction is being further accelerated by improving the coverage of the first dose of measles that stands at 83% as per the JRF 2014 data.⁽⁴⁾

The country provided a second opportunity for measles-rubella vaccination through a mixed approach of both routine and supplementary immunization in the form of campaigns since 2010. The administrative coverage of second dose of measles vaccination at the national level stands at around 60% (HMIS 2015). A coverage level of more than 95% is required to achieve the measles elimination goal in the country and as such there is a need for urgent measures to raise the administrative coverage of measles containing vaccine second dose (MCV2).⁽⁵⁾

In controlled studies, it has been found that measles vaccine efficacy is of the order of 89% when given at 9 months of age and approximately

99% when given at 12 months or more of age. Rubella vaccine is even more efficacious, providing more than 95% sero-conversion rates when administered at 9–12 months or more of age and more than 99% sero-conversion when given beyond 12 months of age.

Very few studies have been conducted in Kalaburagi city on MR immunization status of children and no such study has been done in our urban field practice area. Hence this study was conducted to find out the MR immunization coverage and factors associated with non-immunization among 12-24 months children in urban field practice area of KBNIMS, Kalaburagi city.

Methodology:

Study Design: The present study is a cross-sectional study.

Study Setting: The study was undertaken in urban field practice area of KBNIMS, Kalaburagi.

Study Period: The study was conducted from January 2020 to February 2020.

Selection Of Study Subjects: The study subjects comprise 12-24 months children of urban field practice area of KBNIMS, Kalaburagi city.

Inclusion Criteria:

12-24 months children of urban field practice area of KBNIMS, Kalaburagi.

Exclusion Criteria:

Families who refused to give information and the houses which were locked at the time of visit.

Method Of Data Collection:

Data was collected using a pre-tested semi-structured questionnaire after taking the verbal consent of the informant and explaining each question to the informants. We used online Google form for collecting the data. We did house to house survey of urban field practice area of KBNIMS and took the data from houses with children in age group of 12-24 months. Total sample collected was 436. Health education regarding the benefits of taking MR vaccine and hazards complication of Measles and Rubella were given after collecting the information.

Statistical Analysis:

Data was collected using online Google form and Microsoft Excel sheet was generated using that form and analysed using Epi Info 7.

The coverage of MR vaccination was estimated. Descriptive statistics like frequency and percentages were used. Association of various socio demographic factors with status of MR vaccination was compared using odds ratio and chi-square test. The statistical significance was evaluated at 95% confidence level ($p < 0.05$).

RESULTS:

Of the 436 children, 248(56.88%) were males and 188(43.12%) were females. The MR immunization coverage was found to be 87.61% (Table 1). The main reason for non immunization was illness of the child (34, 62.9%), followed by ignorance (8, 14.9%), lack of awareness (6, 11.1%) and fear of side effects (6, 11.1%) (Table 2).

Table 1: Distribution Of Children Based On MR Vaccination Status

Taken MR vaccine	Frequency	Percent
Yes	382	87.61%
No	54	12.39%
TOTAL	436	100.00%

Table 1: Distribution Of Unvaccinated Children Based On Reason For Non-vaccination

Reason for non vaccination	Frequency	Percent
Lack of awareness	6	11.1
Ignorance	8	14.9
Child was ill	34	62.9
Fear of side effects	6	11.1
Total	54	100

The present study showed that Vaccination coverage was better in females (89.36%) compared to males (86.29%) but the difference was not statistically significant (Chi-square=0.668, df=1, P value=0.413). Vaccination coverage was highest in children of first birth order (94.44%) followed by second, third and least was in children with birth order more than three (73.68%). There was statistically significant association between vaccination coverage and birth order (Chi square=14.52, df=3 P value=0.0023). There was no statistically significant association between immunization status and religion (Odds Ratio=1.96, CI=0.6827-5.6830, Chi-square=1.12, df=1, P value=0.289). (Table 3).

Children from class I and class II socio-economic class families were vaccinated 100%, whereas it was 95% in class III and 90% among both class IV and class V. This association between vaccination coverage and socio-economic status was statistically highly significant (Chi-square =17.81, df=4, P value=0.0013). Children whose mothers were graduate/post-graduate were 100% covered with MR vaccination, followed by mothers with high school education (94.12%). There was statistically significant association between education of the mother and the immunization status of the children (Chi-square=18.48, df=5, P value=0.0024). Children born in hospitals were almost 12 times better covered with MR immunization compared to children born at home and there occurs a statistically highly significant association between place of delivery and vaccination (Odds Ratio=11.81, CI=3.21-43.35, Chi-square=17.128, df=1, P value<0.001). (Table 3)

Table 3: Association Of Different Factors With MR Vaccination Status

Factors	MR vaccination done		Total	Test	P-Value
	Yes	No			
Gender					
Female	168 (89.36%)	20 (10.64%)	188 (100%)	$\chi^2=0.668$, df=1 Odds Ratio=1.33 CI= 0.74-2.40	0.413
Male	214 (86.29%)	34 (13.71%)	248 (100%)		
Birth order					
1	136 (94.44%)	8 (5.56%)	144 (100%)	$\chi^2=14.52$, df=3	<0.01
2	160 (86.96%)	24 (13.04%)	184 (100%)		
3	58 (82.86%)	12 (17.14%)	70 (100%)		
>3	28 (73.68%)	10 (26.32%)	38 (100%)		

Religion					
Hindu	52 (92.86%)	4 (7.14%)	56 (100%)	$\chi^2=1.12$, df=1 Odds Ratio=1.96, CI=0.6827-5.6830	0.289
Muslim	330 (86.84%)	50 (13.16%)	380 (100%)		
Type of family					
Joint	110 (85.93%)	18 (14.07%)	128 (100%)	$\chi^2=2.22$, df=2	0.392
Nuclear	196 (89.91%)	22 (10.09%)	218 (100%)		
3	76 (84.44%)	14 (15.56%)	90 (100%)		
Generation					
Socio-economic class					
Class I	4 (100%)	0 (0%)	4(100%)	$\chi^2=17.81$, df=4	<0.005
Class II	24 100(%)	0 (0%)	24(100%)		
Class II	76 (95%)	4 (5%)	80(100%)		
Class IV	142 (89.87%)	16 (10.13%)	158 (100%)		
Class V	136 (90%)	34 (10%)	170 (100%)		
Education of the father					
UG/PG	20 (90.91%)	2 (9.09%)	22(100%)	$\chi^2=3.0$ 4, df=5	0.692
IM/D	34 (94.44%)	2 (5.56%)	36(100%)		
HS	140 (87.50%)	20 (12.50%)	160(100%)		
MS	78 (88.64%)	10 (11.36%)	88(100%)		
PS	40 (83.33%)	8 (16.67%)	48(100%)		
Illiterate	70 (85.37%)	12 (14.63%)	82(100%)		
Education of the mother					
UG/PG	36 (100%)	0 (0.00%)	36 (100%)	$\chi^2=18.48$, df=5	<0.005
IM/D	30 (78.95%)	8 (21.05%)	38 (100%)		
HS	128 (94.12%)	8 (5.88%)	136 (100%)		
MS	72 (83.72%)	14 (16.28%)	86 (100%)		
PS	80 (85.11%)	14 (14.89%)	94 (100%)		
Illiterate	36 (78.26%)	10 (21.74%)	46 (100%)		
Occupation of the mother					
Home-maker	362 (87.86%)	50 (12.14%)	412	$\chi^2=0.113$, df=1 Odds Ratio=1.44, CI= 0.47-4.40	0.736,
Employed	20 (83.34%)	4 (16.66%)	24		
Place of delivery					
Home	4 (40.00%)	6 (60.00%)	10 (100%)	$\chi^2=17.128$, df=1 Odds Ratio=11.81, CI=3.21-43.35	<0.001
Hospital	378 (88.73%)	48 (11.27%)	426 (100%)		
Total	382 (87.61%)	54 (12.39%)	436 (100%)		

*UG/PG-Undergraduate/Postgraduate, IM/D-Intermediate/ Diploma, HS-High school, MS-Middle school PS-Primary school

DISCUSSION:

This study presents MR vaccination status of 436 children between age 12-24 months belonging to urban field practice area of KBNIMS, Kalaburagi, Karnataka, India, where this type of study was never done

in the past. In the present study, the vaccination coverage reflects that 87.2 % of the children are vaccinated with MR vaccine which is more than the milestone set by WHO- GMRS plan. MR vaccination coverage was found to be less than (92 %) as compare to AHS 2012 (87.7%) but higher than NFHS-3 (61.4%) and DLHS -3 data of rural Bhopal district (56.6 %).^(3,4,5,6) Sivasankaran et al in Tamilnadu also found high coverage (97.7%) of MCV1 vaccine.⁽⁵⁾ Kadri et al in Ahmedabad and Sharma et al in Mumbai found 71.7% and 86% MCV1 vaccination coverage respectively which was less than our study findings.^(7,8) In our study the major cause for non vaccination was illness of the child (62.9%), followed by ignorance (14.9%), fear of side effects (11.1%) and lack of awareness (11.1%). Studies conducted by Kar et al in New Delhi and Nath et al in Lucknow showed that the major cause for non vaccination were illness of child, unawareness of UIP, and visit to native place, similar to our findings.^(9,10)

In our we found females were slightly better (89.36%) vaccinated compared to males (86.29%), similar findings were reported by Nirupam S et al.⁽¹¹⁾ Children of first birth order had the highest vaccination coverage (94.44%) followed by 86.96% vaccination coverage in children of second birth order, 82.86% vaccination coverage in children of third birth order and 73.68. This result was statistically significant with a P value of <0.01. Study conducted by Kulkarni SV in Mumbai and Mahavanshi DK et al in Surendra nagar and Malini kar, et al in Slum Areas of South Delhi, obtained similar results.^(12,13,14)

Children from class 1 and class 2 socio-economic class families were vaccinated 100%, whereas it was 95% in class 3 and 90% among both class 4 and 5. This association between vaccination coverage and socio-economic status was statistically highly significant (P value = 0.0013). Similar findings with distribution of association between socio-economic status and vaccination of children was found In the study done by Chabra P et al⁽¹⁵⁾, it was seen that among the families who belonged to the middle socio economic status, 59.2 % of the children were fully immunized and among the families who belonged to lower socio economic status, 73.5 % of the children were fully immunized.

Vaccination was 1.44 times was better in children whose mothers were working women as compared mothers who were home makers but it was not statistically significant (P-value=0.736). Mother's contribution towards child rearing is considerable hence most of the women preferred to be home makers during the initial years of upbringing of the children. In a study done by Malini kar⁽¹⁴⁾ it was found that among the women who were homemakers, 69.5% of children were fully immunized and 35% were partially immunized and among the working women, 83.34% were fully immunized and 12.14% were non-vaccinated. In our study it was seen that among the employed mothers 83.34% of the children were fully immunized. It can be appreciated that the mothers in spite of being employed found time to get their children fully immunized.

The children born in the hospital were better covered with MR immunization, which is 12 times as compared to the coverage of the children born at home. Studies done by Sharma et al in urban slums of Mumbai and Kumar et al in north India also showed significant association between MCV1 vaccination status and place of delivery similar to our study findings.^(16,17)

CONCLUSION:

This study emphasizes on the importance of the immunization records and its role in the health of the child. Parent's education especially Mother's education is very important to bring awareness about the immunization of the children and benefits of small family in the antenatal period itself. The use of mass media like television, radio should be more effectively used to disseminate information about immunization services. The reasons for non immunization are preventable by increased awareness about vaccine preventable disease and strengthening the immunization services.

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