

KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING MEASLES RUBELLA VACCINE AMONG SCHOOL CHILDREN IN KERALA

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Abstract

Background: Mass vaccination programmes have played an important role in disease elimination, eradication or control strategies. Mass vaccination programmes has been fraught with multiple challenges including understanding of the need, fear of adverse effects, motivation of the government etc. The study was conducted to assess the knowledge and attitude of secondary school students regarding MR vaccine and campaign in urban and rural setting in Kerala. **Materials and Methods:** A cross sectional study was conducted among secondary school children of urban and rural schools in Central Kerala. A questionnaire containing 11 questions along with personal particulars was prepared and administered to the school children. The questionnaire was created, and peer reviewed by pediatricians as well as the immunization officer in charge of the MR programme. All study variables were analysed using descriptive statistical methods like frequencies and percentages for categorical variables and mean with standard deviation for continuous variables. **Result:** The awareness about the MR campaign amongst the study population was very low (24.5%). In this study 78.5% of rural students had received vaccines in school, while only 9.5% of students from urban schools received vaccines from school. Considering attitude towards vaccination, urban students had 44.5% acceptance to take the vaccine as compared to 74% amongst rural school children. **Conclusion:** The awareness towards vaccines need to improve both in rural as well as urban school going children. In rural schools both boys and girls showed a better acceptance in receiving the vaccine at school as compared to the urban schools.

INTRODUCTION

Vaccination has been an important weapon in the fight of mankind against infectious diseases. Along with antibiotics they have played a pivotal role in survival of the human race and the dramatic improvement in individual life expectancies. Mass vaccination programmes, wherein large chunks of the population are vaccinated against specific pathogen(s) have played an important role in disease elimination/eradication/control strategies. The most visible of these has been the Polio programme but there have been smaller programmes targeting individual diseases.^[1] One of the most recent and ambitious mass vaccination programmes has been the Measles Rubella Vaccination campaign in India. India along with other member countries of the Southeast Asia Region of WHO resolved to

eliminate Measles and control Rubella by 2020 (since extended to 2023). In pursuit of this goal the Government of India in collaboration with the state governments launched the MR (Measles – Rubella) immunization campaign in 2017 February. The programme aimed to vaccinate all children from 9 months completed to 15 years in the country with one dose of Measles Rubella vaccine in a phased manner. The programme is an important part of the Sustainable Development Goals (SDG) adopted by India as well. Of the 134,200 global deaths due to Measles, 49,200 deaths were in India.^[2] CRS (Congenital rubella syndrome) is an established cause of congenital malformations, sensorineural deafness, cataract and cardiac anomalies. In India, CRS is estimated to occur in 120-130 children per 100,000 live births.^[3] This campaign was initially launched in the states of Tamil Nadu, Karnataka and

Goa, where about 40 million children were immunized. Kerala went for the MR vaccine campaign in the second phase of the campaign, beginning on Oct 3rd, 2017.

Implementation of mass vaccination programmes whether community based, or school based has been fraught with multiple challenges including understanding of the need, fear of adverse effects, motivation of the government etc. India's experience with the Polio programme was no different as documented in multiple publications.^[4,5] When the Measles Rubella vaccination drive was launched in India, in the states of Tamilnadu and Karnataka it provoked hostility and fear among large sections of the society which was driven by fake Whatsapp forwards and other anti-vaccine social media messages. The MR campaign was almost derailed in the state of Tamilnadu due to these anti vaccine propagandas. When the state of Kerala planned the MR campaign it launched an awareness drive through the health department personnel and using mass media and celebrities. It was in this background that the study attempted to document the actual state of awareness and knowledge among the targeted group that is school children, mainly in the older age group.

The aim of the study therefore was to assess the knowledge and attitude of secondary school students regarding MR vaccine and campaign in urban and rural setting in Kerala. In the background of the current COVID 19 pandemic it is important to look at these kinds of studies since vaccines and quite possibly mass vaccination will most likely be one of the strategies of pandemic mitigation.

MATERIALS AND METHODS

This was a questionnaire based cross sectional study conducted among secondary school children of urban and rural schools in Central Kerala. A questionnaire containing 11 questions along with personal particulars was prepared and administered to the secondary school children of an English medium management school in an urban setting. Malayalam questionnaire which had the same questions (meaning not lost in translation) was administered to secondary school students at a government school in a rural setting. The researcher has taken prior approval from the concerned school principals and respective class teachers. Before administering the questionnaire, the students were briefed about the questionnaire, and they were told that it was a voluntary survey. At the end of the session, the students were explained about the need for MR vaccine campaign and queries were addressed. Around 500 boys and girls from English medium school and Malayalam medium school participated in the study. All students present in the class in 8th, 9th, and 10th std. on the day of serving the questionnaire were included in the study and any

student who was not willing to take the questionnaire was excluded from the study.

The questionnaire was created, and peer reviewed by pediatricians as well as the immunization officer in charge of the MR programme. This was translated in Malayalam in such a way that the meaning of the questions remained the same and was not lost in translation. In both the schools which were included in the study, a talk regarding need for the MR vaccine and vaccines in general was given by the principal investigator after the survey. An interactive session with the teachers was also held. Here the students and their teachers addressed the queries regarding the upcoming MR vaccine campaign.

The data was collected in Microsoft Excel and analyzed using SPSS version 20. All study variables were analysed using descriptive statistical methods like frequencies and percentages for categorical variables and mean with standard deviation for continuous variables.

RESULTS

The total number of students who participated in the study were 533. Among the 245 students participated from the urban area 138 (56.3%) were males and 107 (43.7%) were females. In the rural area, out of 283 students participated, 76 (26.9%) were males and 207 (73.1%) were females. [Table 1].

The questionnaire had a total of 11 questions out of which 6 questions were from the knowledge domain, 3 from awareness and 2 were regarding the attitude and practice. While analyzing the knowledge domain questions, it was found that there was hardly any difference in the knowledge regarding vaccines amongst urban boys and girls. While among rural boys one-third (34%) of them had no idea regarding vaccinations and 17 % of the girls from rural area were unaware about vaccines. In this study 14% of males did not believe vaccines prevented any disease.

In our study around half of both boys (47%) and girls (45%) from urban areas believed that there is no restriction of age for vaccination, while in rural areas only 22% of both boys and girls believed the same. It was interesting to note that almost half the study population in each group thought that there are side effects following vaccination. The only exception was in case of 33% of rural boys, who thought that there are side effects to vaccines.

Considering knowledge on any type of campaign on vaccines, both urban (37%) and rural boys (43%) were more aware compared to urban (29%) and rural girls (27%). The awareness about the MR campaign amongst the study population has shown that, universally in all the groups, urban, rural, boys and girls was very low (24.5%). This could point out to the non-penetration of information to the target audience. Among the groups 81% of the urban girls

had not heard about MR vaccine campaign by Government of Kerala [Figure 1].

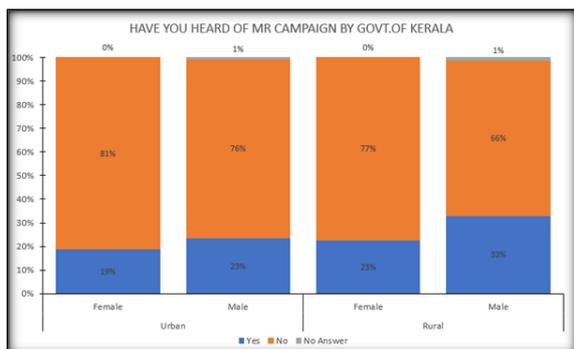


Figure 1: Awareness on MR campaign by Government of Kerala

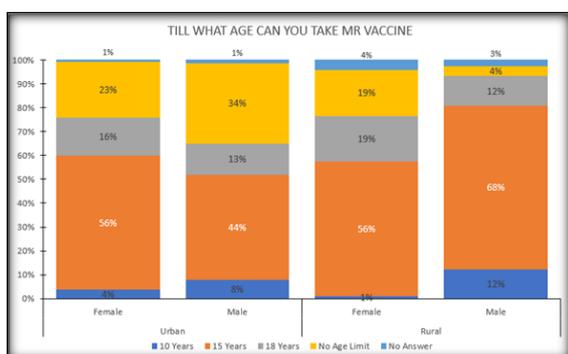


Figure 2: Knowledge on age limit of MR vaccine

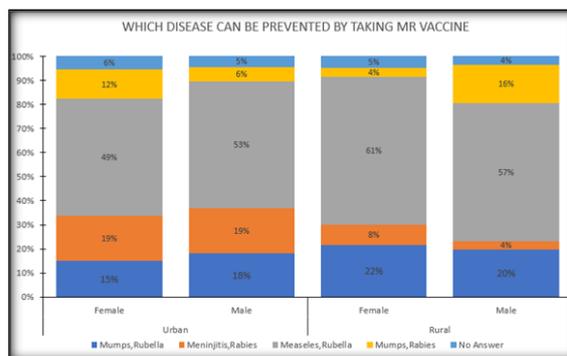


Figure 3: Awareness on diseases prevented by MR vaccine

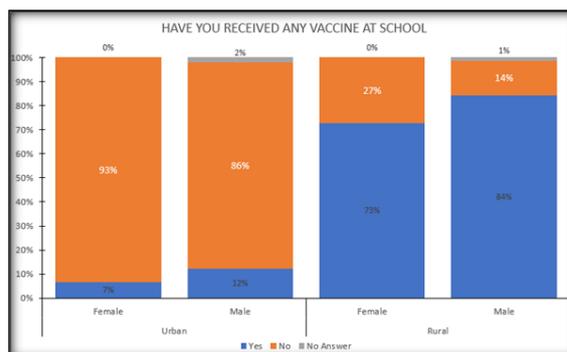


Figure 4: Practice of vaccination by the study population in schools

Table 1: Gender distribution of the study population

Gender	Urban (%)	Rural (%)
Males	138 (56.3)	76 (26.9)
Females	107 (43.7)	207 (73.1)

Table 2: Readiness for MR vaccination at school by the study population

Study Population	Readiness for MR vaccination at school		
	Yes (%)	No (%)	No answer (%)
Urban males	68 (49.2)	68 (49.2)	2 (1.6)
Urban females	43 (41.2)	64 (59.8)	0 (0.0)
Rural males	54 (71.0)	22 (29.0)	0 (0.0)
Rural females	157 (75.8)	49 (23.7)	1 (0.5)

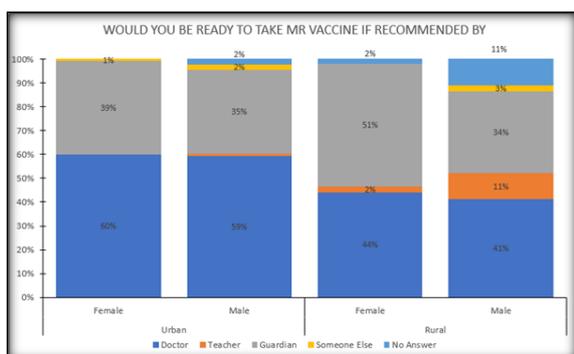


Figure 5: Attitude towards taking MR vaccination

Majority of the students in all groups believed that MR vaccine can be taken till 15 years of age. Others believed the age limit to be 10 years, 18 years and no age limit [Figure 2].

On assessing the knowledge on what all diseases MR vaccine can prevent, the majority of answers were, measles and rubella followed by mumps and rabies [Figure 3].

In response to the question on any vaccines received in school, an interesting fact was revealed. The students from the urban schools had a positive response in only 9.5% of cases whereas almost 78.5% of rural students had received vaccines in school. This might reflect positively on the effective public health system in the rural areas of Kerala, especially the government schools [Figure 4].

Finally, the question on readiness to take vaccine in school elicited a response wherein, urban students had 44.5% acceptance to take the vaccine as compared to 74% amongst rural school children. This could be again attributed to the regular practice of giving 10-year vaccine in the government schools [Table 2].

Majority of students were ready to take the vaccine if recommended by a doctor, followed by guardian or teacher [Figure 5].

In rural schools both boys and girls showed a better acceptance to taking the vaccine at school as compared to the urban schools.

DISCUSSION

Vaccine hesitancy has been identified as one of the ten most important health issues targeted by WHO in the year 2019. It is often assumed that mothers and caregivers have some basic knowledge as to why their children should be vaccinated. However, it is far from clear that this is the case. Andrea Benin et al., reported that “Knowledge about which vaccines are recommended for children was poor among both vaccinators and non-vaccinators”.^[6] Here vaccinators and non-vaccinators refer to mothers who were willing /unwilling to give vaccines to their children. In a study from Saudi Arabia, Abubaker Ibrahim Elbur et al., reported that in a study of 732 parents, most had good knowledge on aspects related to the general role of vaccination in prevention of diseases.^[7] Out of these 672 (91.9%), were aware of timing of the first dose in vaccination schedule. However, poor knowledge was recorded by parents in other aspects like the importance of administration of multiple doses of the same vaccine to child immunity 304 (41.6%), administration of multiple vaccines at the same time having negative impacts on child immunity 271 (37.1%), vaccination of children against seasonal influenza 334 (45.7%) and contraindication to vaccination 287 (39.3%).

Agrawal A and Hanspal R, reported in their study on parents of 240 children on vaccine preventable diseases that, 80% of the parents were unaware that all the vaccines are administered under the national programme.^[8] Among those who have heard about the vaccine, more than half were not aware of the diseases against which the vaccine confers protection. Dr. Patil R et al., reported that 80% of the parents were aware about Universal Immunization Programme (UIP) although most of them did not know the correct name and schedule of all vaccines. 75% of parents did not know about the optional vaccines which are not administered as per national programme.^[9]

A cross-sectional study was conducted among 605 adolescents aged between 13 and 18 years from 22 public schools in Brazil. In the study conducted by Selma Maria da Fonseca Viegas et al., when adolescents were asked for what all diseases, they took vaccinations, the most frequent responses were infantile paralysis (60.7%), yellow fever (56%), tetanus (34%), and measles (28.6%).^[10] Although strictly not in the same age group, a study of university students in Serbia revealed wide difference in knowledge levels among different groups of students. A cross-sectional survey was

carried out on three groups of 509 Belgrade University students (medical, law and engineering students). There was a significant difference in the vaccine knowledge score among the three groups of students. Medical students had significantly higher mean knowledge scores than that of law or engineering students. Compared with the law and engineering students, medical students also had significantly higher attitude scores.

The World Health Organization defines vaccine hesitancy as “a delay in acceptance or refusal of vaccines despite the availability of vaccination services”.^[11] Vaccine hesitancy is a complex phenomenon that encompasses a wide variety of scenarios. Broadly there are different groups of people who display vaccine hesitancy. One is the objectors based on religious grounds and practices, second are the conscientious objectors who are highly educated, third group who are not well informed and then there are those who refuse vaccines following an adverse event.

In the context specifically of MR vaccination, Yuvaraj Krishnamoorthy, et al studied factors influencing vaccine hesitancy during the implementation of Measles-Rubella campaign 2017 in rural Puducherry.^[12] Among 461 participants, the prevalence of vaccine hesitancy for the MR campaign was 14.1% (95%CI: 11–17.6%). In adjusted analysis, only mother's age (aPR–2.27) was the significant predictor of vaccine hesitancy. In qualitative analysis, major facilitating factor for campaign was the role played by the doctors in spreading awareness regarding the importance of vaccine and trust by parents on doctors. Major hindering factors were inadequate knowledge regarding campaign, rumors spread about the safety of vaccine, sudden planning, and under preparedness at health system level. In our study urban students had 44.5% acceptance to take the vaccine as compared to 74% amongst rural school children.

Another study based on the same campaign found that hesitancy/resistance of MR vaccine was high among young parents and parents of younger children.^[13] Vaccine acceptance was higher when it was offered at school ($P < 0.000$) and also among parents who trusted school teachers ($P < 0.003$) and other school children ($P < 0.014$) as source of information. MR vaccine acceptance was less among parents who trusted social media and WhatsApp information. In our study majority of students were ready to take the vaccine if recommended by a doctor, followed by a guardian or a teacher. In a study in Turkey, most parents ($n = 859$, 95.1%) reported believing in the protective effects of vaccination. No statistically significant association was determined between belief in vaccination's protective effects and the characteristics of the study population ($P > 0.05$).^[14] The Pulse Polio programme is the prototype of a mass vaccination programme in India. The programme did run into issues of vaccine hesitancy

especially in Western Uttar Pradesh and pockets of Mumbai-Thane. School based vaccination programmes have been running in India since long as part of the school health programme. These have focused on the DT/TT set of vaccines and targeted specific age /grades. The MR campaign was the first major vaccination campaign that targeted all children up to 15 years of age.

In a study from US, Sarah Perman, et al, identified common factors that influence the implementation of school-based vaccination programmes. These factors included programme leadership and governance, organizational models and institutional relationships, workforce capacity and roles particularly concerning the school nurse, communication with parents and students, including methods for obtaining consent, and clinic organization and delivery.^[15] In an interesting study published in the American Journal of Public Health, Annette Braunack-Mayer et al., concluded that information about immunization should be provided in ways that are appropriate to young people and their parents, and privacy protections should be enhanced when possible.^[16] Involving young people in the design and delivery of programmes would assist with making these improvements.

CONCLUSION

The awareness towards vaccines was found to be low among the study group and it needs to be improved both in rural as well as urban school going children. Compared to the urban schools, boys and girls of rural schools showed a better acceptance in receiving the vaccine while at school. Adolescent children especially those who are attending schools are the future of a nation. Hence, its necessary to understand their knowledge and awareness on public health initiatives such as vaccination.

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