



## PROPORTION OF ADOLESCENT GIRLS VACCINATED AGAINST RUBELLA AND FACTORS OF ITS NON-ACCEPTANCE AMONG PARENTS

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### ABSTRACT

The present study is a descriptive cross sectional one to find out the proportion of adolescent girls vaccinated against rubella and factors of its non-acceptance among parents residing in selected wards of Pangappara Primary Health Centre, Thiruvananthapuram Corporation, Kerala. The research approach used for the study is quantitative approach. The study was conducted among 300 parents of adolescent girls by multistage sampling technique using structured interview schedule. The data analysis was done by descriptive and inferential statistics. The result concluded that the proportion of adolescent girls vaccinated against rubella is low (27.3%) and various parental factors like knowledge of parents regarding rubella infection, availability of vaccine in the nearest health centre and cost of vaccine, information from health worker regarding rubella vaccination, parental thoughts and beliefs regarding unreliability and future effects of refusing rubella vaccine and parental attitude towards rubella vaccination were influencing the acceptance of rubella vaccination among adolescent girls. The advancing age of adolescent girl ( $p=0.001$ ), studying in a Government institute ( $p=0.005$ ) and information from health worker ( $p=0.015$ ) are the independent predictors of rubella vaccination.

**KEYWORDS** : Proportion; Adolescent girls; Non-acceptance; Parents; Rubella vaccine.

### Introduction:

Rubella is a contagious, generally mild viral infection that occurs most often in children and young adults. During pregnancy, particularly in first trimester, rubella infection is far more dangerous and commonly leads to abortion, fetal death or congenital rubella syndrome (CRS). Worldwide, over 100000 babies are born with CRS every year. There is no specific treatment for rubella but the disease is prevented by vaccination. India has one of the fastest growing youth population in the world and adolescent girls of age 13 to 19 years constitute nearly 66 million. Adolescence is an important period for healthy development. This young population, especially the girls, are deprived of the basic health care and awareness. These girls need special care in view of their role in shaping the health and well being of the present as well as future generations.

A community based cross sectional study conducted to evaluate rubella serology in Indian adolescent girls and its relation to socio economic status revealed that the overall seronegativity was 17.83%, indicating vulnerability to acquire rubella. A policy of immunization with MMR or rubella vaccine of susceptible, non-immune adolescent girls is highly desirable in order to prevent rubella and congenital rubella syndrome.

### Objectives:

- To find out the proportion of adolescent girls vaccinated against rubella in selected wards of pangappara primary health centre, Thiruvananthapuram Corporation.
- To assess the factors of non-acceptance of rubella vaccination among parents of adolescent girls residing in selected wards of Pangappara Primary Health Centre, Thiruvananthapuram Corporation.

### Materials and methods:

The setting of the study is selected wards of Pangappara Primary Health Centre, Thiruvananthapuram Corporation, Kerala. A total of 300 parents of adolescent girls were taken by using multistage sampling. The research approach used in the study is quantitative and the design is descriptive. Interview schedule is used to assess the socio-demographic data, proportion of adolescent girls vaccinated against rubella and the factors of non-acceptance of rubella vaccination among the parents. An attitude scale with a score of 60 was used to assess the attitude of parents. Interviewing and self reporting are the techniques for collection of data. Data

obtained from parents were analyzed using descriptive and inferential statistics with the help of SPSS. A 'p' value of 0.05 was taken as the level of significance.

### Results:

The findings of the present study revealed that the proportion of adolescent girls vaccinated against rubella is only 27.3% and 72.7% of adolescent girls were not vaccinated against rubella. Among the subjects, 48% of the adolescent girls were studying in government institutions, 22% in aided institutions, 28.3% in private institutions, and 1.7 % of the adolescent girls were not undergoing any kind of schooling at the time of survey. It is clear that 43.9% of the parents of the adolescent girls who are vaccinated have average knowledge and there is significant association between knowledge regarding rubella infection and rubella vaccination. The study shows that, 70.7% of the parents of the adolescent girls who were vaccinated had positive attitude towards adolescent rubella vaccination, the observed difference is statistically significant ( $p<0.005$ ). Binary logistic regression reveals that advancing age of adolescent girl ( $p=0.001$ ), studying in a government school ( $p=0.005$ ) and receiving information from any of the health worker ( $p=0.015$ ) are independent predictors of rubella vaccination.

**Figure 1: Distribution of adolescent girls based on proportion of vaccinated against rubella.**

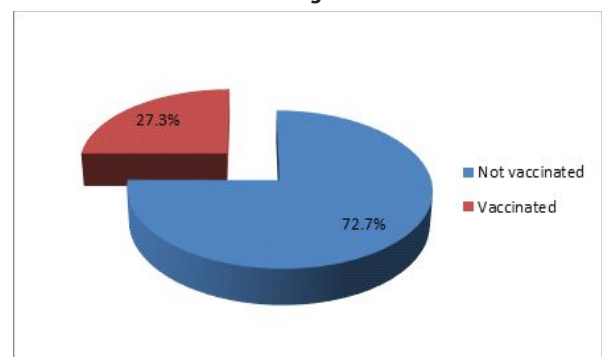


Figure 1 depict that only 27.3% of adolescent girls were vaccinated against rubella and 72.7% of adolescent girls were not vaccinated against rubella.

**Table 1: Association between availability and accessibility of health care facilities and rubella vaccination**

Variable	Vaccinated	Not vaccinated	$\chi^2$	p value
<b>Availability of nearest health centre</b>			<b>0.716</b>	0.699
Sub centre	50 (61%)	130(59.6%)		
Primary health centre	14 (17.1%)	46(21.1%)		
Tertiary care hospital	18 (22%)	42 (19.3%)		
<b>Availability of vaccine in the nearest health centre</b>			<b>12.425</b>	<b>0.002</b>
Yes	47 (57.3%)	76 (34.9%)		
No	5 (6.1%)	21 (9.6)		
Don't know	30 (36.6%)	121(55.5%)		
<b>Availability of vaccine at free of cost</b>			<b>20.031</b>	<b>0.001</b>
Yes	50 (61.0%)	71 (32.6%)		
No	4 (4.9%)	16 (7.3%)		
Don't know	28 (34.1%)	131(96.01%)		
<b>Information from health worker regarding rubella vaccination</b>			<b>32.170</b>	<b>0.001</b>
Yes	45 (54.9%)	46 (21.1%)		
No	37 (45.1%)	172 (78.9%)		
<b>Type of informant given the information</b>			<b>2.774</b>	0.428
ASHA worker	16 (35.6%)	18 (39.1)		
Teachers of the school	15 (33.3%)	9 (19.6%)		
Health centre nurse	11 (24.4%)	13 (28.3%)		
Doctor	3 (6.7%)	6 (13.0%)		

From the table it is clear that there is significant association between availability of vaccine in the nearest health centre and rubella vaccination. It is also evident that there is significant association between availability of vaccine at free of cost and rubella vaccination (p = 0.001), also 54.9% of parents of adolescent girls who have vaccinated got information from the health workers and this is statistically significant (p<0.001).

**Table 2: Association between beliefs and mis-concepts and rubella vaccination**

Variable	Vaccinated	Not vaccinated	$\chi^2$	p value
<b>Choice of treatment in the family</b>			<b>1.868</b>	0.867
Modern medicine	64 (78%)	168 (77.1%)		
Ayurveda	1 (1.2%)	9 (4.1%)		
Homeo	5 (6.1%)	11 (5%)		
Modern medicine + Ayurveda	3 (3.7%)	6 (2.8)		
Modern medicine + Homeo	8 (9.8%)	22 (10.1%)		
Modern medicine + Ayurveda + Homeo	1 (1.2%)	2 (0.9%)		
<b>Trust towards modern medicine</b>			<b>2.242</b>	<b>0.134</b>
Yes	79 (96.3%)	199 (91.3%)		
No	3 (3.7%)	19 (8.7%)		
<b>Thoughts about unreliability of rubella vaccine</b>			<b>3.841</b>	<b>0.050</b>
Yes	22 (26.8%)	85 (39.0%)		
No	60 (73.2)	133 (61.0%)		

<b>Belief regarding future effects of refusing rubella vaccine</b>			<b>35.413</b>	<b>0.001</b>
Yes	48 (58.5%)	49 (22.5%)		
No	34 (41.55%)	169 (77.5%)		
<b>Beliefs regarding needlessness of the vaccine because of the childhood MMR vaccination</b>				
Yes	3 (3.7%)	77 (35.5%)		
No	1 (1.2%)	136 (62.7%)		
Not applicable	78 (95.1%)	4 (1.8%)		
<b>Beliefs about rubella vaccine will affect pregnancy</b>			<b>1.506</b>	0.220
Yes	38 (46.3%)	84 (38.5%)		
No	44 (53.7%)	134 (61.5%)		

The table depict that 73.2% of parents of adolescent girls who are vaccinated believe that rubella vaccine is a reliable vaccine and it was found to be significant (p=0.050). Also there is significant association between belief regarding future effects of refusing rubella vaccine and rubella vaccination (p=0.001).

**Table 3: Association between other factors of non-acceptance and rubella vaccination**

Variables	Vaccinated	Not vaccinated	$\chi^2$	p value
<b>Previous history of rubella infection in adolescent girls</b>			<b>4.422</b>	0.110
Yes	3 (3.7%)	2 (0.9%)		
No	62 (75.6%)	153 (70.2%)		
Don't know	17 (20.7%)	63 (28.9%)		
<b>History of having allergy towards any kind of vaccines in adolescent girls</b>			<b>0.258</b>	0.612
Yes	3 (3.7%)	11 (5%)		
No	79 (96.3%)	207 (95.0%)		
<b>History of having other health problems in adolescent girls</b>			<b>0.713</b>	0.398
Yes	6 (7.3%)	23 (10.6%)		
No	76 (92.7%)	195 (89.4%)		
<b>School immunization programme on rubella vaccination held in the school in which the adolescent girl is studying</b>			<b>87.154</b>	<b>0.001</b>
Yes	58 (70.7%)	33 (15.1%)		
No	14 (17.1%)	106 (48.6%)		
Don't know	10 (12.2%)	79 (36.2%)		
<b>Believe that rubella vaccination is needed only just before the marriage of the adolescent girl</b>			<b>13.318</b>	<b>0.001</b>
Yes	40 (48.8%)	63 (28.9%)		
No	16 (19.5%)	37 (17.0%)		
Don't know	26 (31.7%)	118 (54.1%)		
<b>Negative information regarding vaccine from anyone in the locality</b>			<b>0.360</b>	0.549

Yes	9 (11%)	19 (8.7%)		
No	73 (89%)	199 (91.3%)		

Table shows that, 70.7% of the parents of the adolescent girls who were vaccinated had reported that there was the school

immunization programme on rubella vaccination in the school in which their daughters were studying, this is statistically significant (p=0.001). It is also evident that there is significant association between parental beliefs that rubella vaccination is needed only just before the marriage of the girl and rubella vaccination.

**Table 4:Association between knowledge of parents of adolescent girls regarding rubella infection and rubella vaccination**

		Rubella vaccination				χ <sup>2</sup>	df	P		
		Vaccinated	Not vaccinated							
		N	%	N	%					
<b>Knowledge</b>	Poor	30	36.6	143	65.6	173	57.7	24.373	2	<b>0.010</b>
	Average	36	43.9	62	28.4	98	32.7			
	Good	16	19.5	13	6.0	29	9.7			

From table it is evident that 43.9% of the parents of the adolescent girls who are vaccinated have average knowledge and there is

significant association between knowledge regarding rubella infection and rubella vaccination.

**Table 5:Association between attitude of parents and rubella vaccination**

		Rubella vaccination		χ <sup>2</sup>	df	p				
		Vaccinated	Not vaccinated							
		N	%	N	%	N	%			
<b>Attitude</b>	Average	24	29.3	108	49.5	132	44.0	9.939	1	<b>0.002</b>
	Positive	58	70.7	110	50.5	168	56.0			

Table 5 shows that, 70.7% of the parents of the adolescent girls who were vaccinated had positive attitude towards adolescent rubella

vaccination. This is statistically significant (p<0.005).

**Table 6:Independent predictors of rubella vaccination ( The table generated in logistic regression analysis.)**

Variables	B	S.E.	Wald	df	p	OR	95% CI for OR	
							Lower	Upper
<b>Age of adolescent girl</b>	<b>1.464</b>	<b>0.332</b>	<b>19.506</b>	<b>1</b>	<b>0.001</b>	<b>4.324</b>	<b>2.258</b>	<b>8.282</b>
Nuclear family	0.702	0.394	3.165	1	0.075	2.017	0.931	4.371
Number of Children	0.337	0.43	0.613	1	0.434	1.401	0.603	3.255
<b>Educational Institution – Government</b>	<b>0.88</b>	<b>0.317</b>	<b>7.708</b>	<b>1</b>	<b>0.005</b>	<b>2.411</b>	<b>1.295</b>	<b>4.487</b>
Knowledge	0.873	0.475	3.381	1	0.066	2.394	0.944	6.071
Rubella-Vaccine Availability in Health centre	0.046	0.39	0.014	1	0.907	1.047	0.488	2.246
Rubella vaccine at Free of cost in health centre	0.374	0.403	0.865	1	0.352	1.454	0.661	3.201
<b>Information from Health worker</b>	<b>0.919</b>	<b>0.379</b>	<b>5.863</b>	<b>1</b>	<b>0.015</b>	<b>2.506</b>	<b>1.191</b>	<b>5.272</b>
Think that rubella vaccine is an unreliable one.	0.395	0.35	1.277	1	0.259	1.485	0.748	2.947
Aware about future effects of refusing rubella vaccine.	0.597	0.361	2.738	1	0.098	1.816	0.896	3.682
Rubella vaccine needed only just before marriage	0.383	0.324	1.394	1	0.238	1.467	0.777	2.769
Attitude	0.505	0.345	2.137	1	0.144	1.657	0.842	3.26
Constant	-10.439	1.691	38.117	1	0.00	0.000		

**Discussion:**

The findings of the present study revealed that the proportion of adolescent girls vaccinated against rubella is only 27.3% and 72.7% of adolescent girls were not vaccinated against rubella. This result was in congruent with a community based cross sectional study which is conducted in India among adolescent girls revealed that the overall seronegativity was 17.83%, indicating vulnerability to acquire rubella and none of the girls not having the history of MMR or rubella vaccination.

The present study shows that there is significant association between availability of vaccine in the nearest health centre and rubella vaccination (p=0.002), availability of vaccine at free of cost and rubella vaccination (p= 0.001). There is significant association between information related to rubella vaccination from health workers and rubella vaccination (p<0.001). This study also implies that 73.2% of parents of adolescent girls who are vaccinated believe that rubella vaccine is a reliable vaccine and it was found to be significant (p=0.050). There is significant association between belief regarding future effects of refusing rubella vaccine and rubella vaccination (p = 0.001). In the present study 43.9% of the parents of the adolescent girls who are vaccinated have average knowledge and it is statistically significant to rubella vaccination(p=0.010). The study revealed that, 70.7% of the parents of the adolescent girls who

were vaccinated had positive attitude towards adolescent rubella vaccination, and is statistically significant (p<0.005). These results were in congruent with a study conducted in Saudi Arabia which revealed that parents' knowledge about immunization and their attitudes towards them are likely to influence vaccine uptake.

**Conclusion:**

Based on the findings of the study, it is very clear that the proportion of adolescent girls vaccinated against rubella is only **27.3%**. The identified factors of non-acceptance of rubella vaccine among the parents of adolescent girls are knowledge of parents regarding rubella infection and vaccination, availability of vaccine in the nearest health care centre and the cost of vaccine, information from health worker regarding rubella vaccination, parental thoughts and beliefs regarding unreliability and future effects of refusing rubella vaccine and parental attitude towards rubella vaccination. Binary logistic regression reveals that advancing age of adolescent girl (**p =0.001**), studying in a Government school (**p = 0.005**) and receiving information from the health worker (**p = 0.015**) are independent predictors of rubella vaccination.

Considering the currently available knowledge and reports, it is well evident that CRS can be controlled by effective immunization

programme and inclusion of rubella vaccination in the national immunization programme of India is much needed.

Therefore, as per assumption of the present study, the proportion of adolescent girls vaccinated against rubella is low and various parental factors will influence the acceptance of rubella vaccination among adolescent girls.

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