



INDIAN JOURNAL OF MEDICAL MICROBIOLOGY

(Publication of Indian Association of Medical Microbiologists)

ISSN 0255-0857

Volume 26

Number 1

January-March, 2008

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Seroprevalence of Rubella Among Urban and Rural Bangladeshi Women Emphasises the Need for Rubella Vaccination of Pre-pubertal Girls

Dear editor,

Rubella virus infection poses a serious threat to the developing foetus if contracted during early pregnancy. In post-rubella vaccination era, endemic rubella and congenital rubella syndrome (CRS) continue to occur in much of the developing world, and Bangladesh is not an exemption.^[1] The present study was designed to report the prevalence of rubella antibody in the female population of different age groups in both rural and urban areas and to find out the susceptible age group and the eligible group for rubella immunization. The study was carried out by the Department of Virology,

Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from April 2004 to June 2005 with subjects in the age group of 1-45 years. The estimation for rubella-specific IgG was done in the study population consisting of a total of 582 children and women in the child-bearing age.

The average prevalence of rubella antibody was 71.99%, and the prevalence of rubella IgG increased gradually with age. In the 1-5-year age group, the prevalence was found to be 21.31%, which gradually increased with age to reach

Table: Distribution of prevalence of rubella-specific IgG in the study population

Age group (n)	Rubella serology		Rubella prevalence [@]	
	Positive [#] (%)	Negative (%)	Urban	Rural
1-5 years (61)	13 (21.31)	48 (78.69)	25.80%, 8 (31) ^{\$}	16.60%, 5 (30)
6-10 years (61)	32 (52.45)	29 (47.55)	53.33%, 16 (30)	51.61%, 16 (31)
11-15 years (63)*	42 (66.66)	21 (33.34)	67.74%, 21 (31)	65.62%, 21 (32)
16-20 years (62)	48 (77.41)	14 (22.59)	80.64%, 25 (31)	74.19%, 23 (31)
21-25 years (83)	68 (81.92)	15 (18.08)	82.69%, 43 (52)	80.64%, 25 (31)
26-30 years (67)	56 (83.58)	11 (16.42)	83.33%, 30 (36)	83.80%, 26 (31)
31-35 years (63)	51 (80.95)	12 (19.05)	83.33%, 25 (30)	78.78%, 26 (33)
36-40 years (60)	53 (88.33)	7 (11.67)	90.00%, 27 (30)	86.66%, 26 (30)
41-45 years (62)	56 (90.32)	6 (9.68)	90.00%, 27 (30)	90.62%, 29 (32)
Total (582)	419 (71.99)	163 (28.01)	222 (301)	197 (281)

*11-15-year age group has been broken into 11-12 years and 13-15 years, and prevalence in 12 years was 65.20; [@]According to area of residence, Z-tests done, $P > 0.05$; ^{\$}Percentage of prevalence, number of positives (number tested in this section); [#]Antibody titer ≥ 10 IU/mL was considered positive, < 5 IU/mL negative, and ≥ 5 to < 10 IU/mL indeterminate

90.32% in the 41-45-year age group, excepting a slight drop (2.63%) in 31-35-year age group. A similar trend was observed in both urban and rural females when arranged according to age groups (Table). The percentage of new cases, i.e., incidence rate, in a specific group was calculated by deducting the total percentage of rubella IgG positives in that group from the percentage of the preceding age group; there was a significant increase (31.14%) in the incidence of infection in the 6-10-year age group ($P < 0.001$).

The gradual increase in the prevalence of rubella infection with age indicates a continuous exposure of the population to rubella virus. Similar findings were reported in previous studies from India^[2] as well as in most of the industrialized countries before the introduction of rubella vaccination programme.^[3,4] The highest incidence of infection occurred in 6-10-year age group, and children become protected from further rubella infection. Although it was thought that population density, area of residence and socioeconomic factors of a given community influence rubella infection, the prevalence of rubella antibody was more or less similar in urban and rural areas. It indicates that the women of both areas are at similar risk of infection to rubella virus in Bangladesh.

In this study, it was seen that 65.20% female children acquired immunity to rubella by the age of 12 years. Thereafter, 25.12% of women in the child-bearing age (i.e., 13-45 years) acquired new infection; if they contracted rubella infection during their early pregnancy, there is a high probability of developing CRS.

World over, 124 countries reported a national policy of rubella vaccination in 2002. Although studies indicate that rubella immunization is a cost-effective means of reducing the

impacts of CRS, Bangladesh and other South Asian countries, except Sri Lanka and Maldives, have not yet included this vaccine in their national vaccination system.^[5] In the present study, we found that more than 50% of pre-pubertal girls were immunized by natural infection. As reduction of infant mortality was one of the priority objectives of the Millennium Development Goal, introduction of rubella vaccine in the pre-pubertal age may be beneficial in further reducing infant mortality rate and CRS.

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Received: 25-06-07

Accepted: 06-07-07