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# LETTERS TO THE EDITORS

## Seroprevalence of cytomegalovirus antibody in antenatal population in Bangladesh

Cytomegalovirus infection is endemic in most countries. It is a DNA virus and after its primary occurrence becomes latent and periodic reactivation with intermittent viral shedding may continue throughout life. The virus shedding occurs in different components of the body fluid as saliva, urine, feces, blood, semen, cervical secretion and breast milk. The virus can cross the placenta and congenital infection of the fetus might occur in any time of gestational period. Transmission also may occur during delivery from virus present in maternal blood or cervical secretion or during breast feeding from a seropositive mother. Human cytomegalovirus is the most common cause of viral intrauterine infection in developed countries, affecting 0.5 to 2% of all live births and a well-established cause of congenital disability[1-2]. In cytomegalovirus infection, cell-mediated immunity is the primary mechanism for recovery and the fetus and infant are at high risk of damage as it has less developed cell-mediated immune system. Majority of the patients do not suffer from any symptom during both primary and recurrent infection. Only occasionally the patient suffers from flu-like illness. Less than 10% of congenitally infected infants reveal symptoms in the newborn period as hepatosplenomegaly, petechae, thrombocytopenia, prolonged neonatal jaundice, pneumonitis, growth retardation, microcephaly and cerebral calcification[3]. These groups are likely to develop later serious complications as senseroneural deafness, cerebral palsy, epilepsy, mental retardation, choriodoretinitis, optic atrophy, delayed psychomotor development, expressive language delay, and learning disability[4]. Presence of cytomegalovirus specific IgM antibodies in a single blood sample indicates a recent or current infection. IgM antibodies usually persist for up to 16 weeks following a primary infection[5].

Blood was randomly collected from 420 pregnant women of age between 15-45 years (irrespective of gestational age) attending the Obstetrics outpatient department from July 2002 to May 2003. Samples were analysed for cytomegalovirus antibodies (IgG and IgM) by Enzyme Linked Immunosorbent Assay (ELISA) in the Virology Department of BSMMU. Data analysis was performed using SPSS. Statistical test ($\chi^2$) were performed and p value <0.05 were considered significant.

Among the 420 pregnant women, 288 (68.6%) were cytomegalovirus IgG seropositive and 21 (5.0%) women were cytomegalovirus IgM seropositive. Among the 288 cytomegalovirus IgG seropositive cases, 19 (6.6%) were also seropositive for cytomegalovirus IgM. Two of the 132 seronegative cases for cytomegalovirus IgG were positive for cytomegalovirus IgM. The prevalence of cytomegalovirus IgG antibody was 66.7% by the age of 15 to 20 years. It gradually increased with age and became 71.4% in the age group of 26-30 years. Then the seropositivity showed some decline to 66.1% in the age group of >31 years and above.

Level of education, occupation of the women, socio-economic condition, parity, history of fever, miscarriage, preterm labor, stillbirth and neonatal death did not reveal any independent association with developing cytomegalovirus IgG in this study population (Table I and II).

**Table I:** Influence of socio-demographic factors on seroprevalance of cytomegalovirus IgG

| Characteristics | Sero-prevalance of CMV IgG | | p value |
|---|---|---|---|
| | Positive (%) n= 288 | Negative (%) n=132 | |
| Education of women | | | |
| No education | 18 (6.3) | 7 (5.3) | |
| Primary education | 93 (32.3) | 41 (31.1) | |
| Secondary education | 49 (17.0) | 31 (23.5) | 0.46 |
| Higher secondary education and above | 128 (44.4) | 53 (40.2) | |
| Occupation of women | | | |
| Housewife | 245 (85.1) | 106 (80.3) | |
| Service holder | 38 (13.2) | 20 (15.2) | 1.99 |
| Laborer | 5 (1.7) | 6 (4.5) | |
| Socio-economic condition | | | |
| Poor and lower middle class | 60 (20.8) | 36 (27.3) | |
| Higher middle class | 161 (55.9) | 66 (50.0) | 0.33 |
| Rich | 67 (23.3) | 30 (22.7) | |
| Parity | | | |
| Primigravida | 135 (46.9) | 58 (43.9) | |
| 1 | 96 (33.3) | 49 (37.1) | |
| 2 | 36 (12.5) | 18 (13.6) | 0.76 |
| 3 and above | 21 (7.3) | 7 (5.3) | |

**Table II:** Influence of different variables on likelihood of having cytomegalovirus IgG antibody

| | Odd ratio | 95% CI | p |
|---|---|---|---|
| History of fever | | | |
| Fever (n=51) | 1 | 0.30 - 1.20 | 0.46 |
| No fever (n= 369) | 0.6 | | |
| Miscarriage | | | |
| No miscarriage (n=346) | 1 | 0.90 - 2.58 | 0.11 |
| Miscarriage (n=74) | 1.5 | | |
| Pre-term labor | | | |
| Yes n=16) | 1 | 0.24 - 2.76 | 0.07 |
| No (n=404) | 0.8 | | |
| Still birth | | | |
| No (n=406) | 1 | 0.77 - 7.84 | 0.13 |
| Yes (n=14) | 2.5 | | |
| Neonatal death | | | |
| Yes (n=16) | 1 | 0.5 - 1.23 | 0.09 |
| No (n=404) | 0.3 | | |

High seroprevalence (68.6%) of cytomegalovirus infection among the study population indicates the necessary of good sanitary and hygienic practices among the pregnant population. Serological survey in India, Russia and Singapore also showed high cytomegalovirus sero-prevalence (62-90%) among antenatal population[6-8]. Studies in Brazil, Egypt and Turkey showed even a higher antenatal cytomegalovirus IgG seroprevalence (87% and 95.7%)[9-11].

In the present study, 32% of the women were cytomegalovirus IgG seronegative and were susceptible to primary cytomegalovirus infection during pregnancy. Two (1.5%) of the 132 cytomegalovirus IgG seronegative cases were positive for cytomegalovirus IgM and those were definitely cases of primary cytomegalovirus infection. In UK about 1% of seronegative pregnant women develop primary infection[5,12]. Among the 288 cytomegalovirus IgG seropositive cases, 19 (6.6%) were also seropositive for cytomegalovirus IgM and this means that these cases have had reactivation of previous infection or primary infection. All these findings indicate that cytomegalovirus infection is a common endemic condition in Bangladesh.

Developing cytomegalovirus screening programme is not feasible at the national level at the moment and preventing primary cytomegalovirus infection through vaccination is still under evaluation. Congenital cytomegalovirus infection may be minimized by educating the antenatal population. As age, education, occupation, parity, socioeconomic condition does not have significant association with cytomegalovirus seroprevalence, all women of reproductive years need counseling and education as they are susceptible to antenatal cytomegalovirus infection. Pregnant women should avoid public places and maintain good hygiene.

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**Ashrafunnessa[1], Shahla Khatun[2], Mohammad Nazrul Islam and M.H. Rashid[4]**

[1]Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka; [2]Department of Obstetrics and Gynaecology, Bangladesh Medical College, Dhaka; [3]Department of Virology, BSMMU, Dhaka; [4]Upazila Health Complex, Singair, Manikganj, Bangladesh.

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**Current population-based public health workforces in Bangladesh**

World Health Day 2006 demonstrated spotlight on health workforce crisis. The report mentioned that an acute shortage of health workers is having a devastating impact on many countries' ability to fight disease and improve health. The report outlines the need for more investment in the health workforce and sets out a 10-year plan to address the crisis[1]. The World health report 2006 defines health workers as all people engaged in actions whose primary intent is to enhance health[2,3]. Health workers include people who provide health services such as doctors, nurses, pharmacists, laboratory technicians and management and support workers such as financial officers, cooks, drivers and cleaners[4-5]. The core functions of public health agencies have been defined as assessment (community diagnosis); policy development and leadership; and assurance of access to environmental, educational, and personal health services[2]. Rich countries have pledged to support them, through aid, debt relief, and fairer trade. Strategies for Millennium Development Goals (MDGs) are partnership, good practice, goal by goal, knowledge network, and millennium projects[6-8]. The number of health workers in a country is the main indicator of its capacity to deliver services and varies substantially among countries. Fifty-seven countries, most of them in Africa and Asia, face a severe health workforce crisis. WHO estimates that at least 2,360,000 health service providers and 1,890,000 management support workers, or a total of 4,250,000 health workers, are needed to fill the gap. Health workforce of health and family welfare and community volunteers were intended to work here.

A cross sectional study conducted in 41 districts out of 64 of Bangladesh from July 2007 to June 2008. The objective was to identify the current status of public health workforce under the district health care system to reach the MDGs. The study populations were office of the civil surgeon's and their relevant records were used as source of data. Simple random sampling technique was used for collection of data in this study. Both questionnaire and checklist was developed based on the objective of the study and was used accordingly for data collection. At the study sites data was collected reviewing the records documents using the research instruments with the help of the concern workforces. Data were accumulated, checked and verified for completeness and correctness. After editing, necessary coding data was entered in to computer for analysis using SPSS 12.0 package. Descriptive statistics was employed for analysis of data for finding results and interpretations.

At the base of recruitment of health assistant, 87.7% districts were found that each of them were recruited for every 5,000 or less number of populations and on an average population for each health assistant were 4,311 and maximum were for 6,000 populations. But at present, a health assistant is working for more than 5,000 populations, mean 8,508 and maximum 17,500 populations found in 90.2% districts. Highest 36.6% districts have found available post for health assistant 201 to 300, mean available posts 354 and maximum 829 posts. But at present, highest 53.7% districts have found ≤200 health assistant is working, mean working health assistant 235 and maximum 563 health assistant are working.

**Table I:** Distribution of field level public health workforces and working population in different district (n=41)

| Number of populations and posts for workforces | Population serving by health workforce | | |
|---|---|---|---|
| | Mean ± SD | Number of Districts | % |
| *Health assistant* | | | |
| Base recruitment for ≤5,000 population | 4311 ± 792 | 36 | 87.7 |
| Working at present for ≤5,000 population | 8,508 ± 3,332 | 4 | 9.8 |
| Present post 201-400 | 354.05 ± 189 | 22 | 53.7 |
| Working at present ≤300 | 235 ± 124 | 31 | 75.9 |
| *Assistant health inspector* | | | |
| Base recruitment ≥5 | 5 ± 1 | 32 | 78.0 |
| Working at present ≤4 | 4 ± 1 | 25 | 61.0 |
| Available post at present ≤100 | 71 ± 38 | 33 | 80.5 |
| Working at present ≤100 | 63 ± 33 | 34 | 83.0 |
| *Health inspector* | | | |
| Base recruitment for assistant health inspector ≤4 | 4 ± 3 | 38 | 92.7 |
| At present working for assistant health inspector ≤4 | 5 ± 3 | 30 | 73.2 |
| At present available post of health inspector ≤25 | 24 ± 13 | 29 | 70.7 |
| At present health inspector working ≤25 | 17 ± 10 | 33 | 80.5 |