

## Prevalence of Helicobacter Pylori in Asymptomatic Population - a Pilot Serological Study in Bangladesh

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Epidemiological reports reveal that *H. pylori* is distributed among all population in the world. The present cross-sectional study was undertaken to see the *H. pylori* seroprevalence rates among the asymptomatic adults, as yet reportedly no such data available in Bangladesh. Serum samples were collected from 181 consecutive subjects who attended at the health check-up centre of Bangladesh Institute of Diabetic, Endocrine and Metabolic Disorders (BIRDEM), Dhaka, during the period of August to November 1995 for medical check up. The mean age of these subjects was 30.33 years (range 20 - 44 yrs). Incidentally all were male and belonged to average socioeconomic class. *H. pylori* specific IgG antibody level was assayed by an enzyme immunoassay kit EIAgen (Clone system). Among the 181 subjects, 166 (92%) had *H. pylori* specific antibodies and 15 (8%) were seronegative. No significant difference ( $p < 0.90$ ) in seroprevalence rates was observed among different age groups. However, the results of higher seroprevalence rates of *H. pylori* infection in these asymptomatic adult population of Bangladesh are consistent with that of Africa and India. *J Epidemiol*, 1997; 7 : 251-254.

Helicobacter pylori, seroprevalence, enzyme linked immunoassay

*Helicobacter pylori* a gram negative, microaerophilic bacterium, considered as the main aetiological agent for chronic gastritis<sup>1)</sup> and also an important determinant for ulcerogenesis, especially in the long term recurrence of duodenal and gastric ulcer disease<sup>2,3)</sup>. The evidences are also mounted regarding its association with gastric adenocarcinoma and low-grade primary gastric lymphoma<sup>4-9)</sup>. Recent epidemiological reports of *H. pylori* reveal that it is distributed among all population in the world. The prevalence rate in the developed countries is generally lower than that in the developing countries, reflecting socioeconomic status; the poorer a population the earlier is the age of infecting *H. pylori*, resulting in the higher prevalence rate<sup>10-12)</sup>. Since the recognition of role of *H. pylori* in the aetiology of various gastroduodenal diseases, a number of methods which can be used for the diagnosis of *H. pylori* infection and are highly accurate but have the drawback of

requiring gastroduodenoscopy. A possible non - invasive alternative is C -urea<sup>13)</sup> and C -urea breath tests<sup>14)</sup> which depends however, on specialized instrument or radioactive isotopes<sup>15,16)</sup>. The simplest noninvasive test is to detect the specific antibodies to *H. pylori* in serum<sup>17-20)</sup>. However, the systemic immune response to *H. pylori* infection confers no protection against the organisms and its presence is of diagnostic value only<sup>21)</sup>. Bangladesh is one of the developing country having a reported highest point prevalence of duodenal ulcer among the population above the age of 15 years<sup>22)</sup>, thus an attempt has been made to see the seroprevalence of *H. pylori* in a cross-section of asymptomatic adult population and which will be helpful to plan a future large-scale population survey in different age and socioeconomic groups.

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**Table 1.** Baseline data with results.

Period of study	Aug, 95 - Nov, 95
Sex	All were male
Age (Yrs.)	Mean 30.33 (range 20-44)
Socioeconomic status	Average
Test undertaken to detect H. pylori	ELISA (EIA gen, ELISA kit Clone system)
Total number of sample	181
No. of subjects found positive	166
Prevalence of H. pylori	92%

**Table 2.** H. pylori seroprevalence rates in different age groups.

Age groups (years)	No. of subjects	No. of Positive test	H. pylori seroprevalence rate(%)
20-24	33	29	88
25-29	100	92	92
30-34	34	32	94
35-39	13	12	92.3
40-44	1	1	100
Total	181	166	91.71

## SUBJECTS AND METHOD

The serum samples were collected from 181 consecutive healthy young male individuals who attended during the period of August to November 1995, for medical check-up at Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders (BIRDEM) Health Check Centre (BHCC) to work as immigrant worker in Malaysia. Subjects came from different parts of Bangladesh. Informations about their age and socioeconomic status were noted. After separation of serum by centrifugation, samples were stored at -20°C before testing. The serum samples test was based on the ELISA (Enzyme Linked Immunosorbent Assay) technique<sup>23)</sup> by using an ELISA test kit, (EIAgen, Clone system S.P.A., Casalecchio Di Reno, Italy). This assay system was based on qualitative detection of IgG specific antibodies to H. pylori. The type of antigen (s) used in EIAgen kit was not detailed in the supplied instructions. The test was performed according to manufacturer's instruction. H. pylori antigens were immobilized on the wells of micro-well plate. Diluted patients serum was added to the wells. IgG antibodies specific to H. pylori, if present bind to the antigen on the micro wells. The intensity of the colour corresponds directly to the amount of antibodies present. The cut-off values of more than 15 arbitrary unit (AU) permililiter (ml) was considered as positive test.

## Statistical Analysis

Statistical comparison were made with JMP software (SAS institute)<sup>24)</sup>. A two sided p value of 0.05 was the criterion for statistical significance. Chi-square test was done to find any difference in prevalence of different age groups of population.

## RESULTS

The baseline data is summarized in Table 1. The mean age of these subjects was 30.33 years (range 20 to 44). All were male and came from almost all the districts of Bangladesh. Study subjects were the village people, belonged to average socioeconomic class and cultivation was their sole livelihood. Among the 181 subjects, 166 (92%) had H. pylori specific IgG antibodies and 15 (8%) were seronegative (Table 2). There was no significant difference ( $P < 0.05$ ) observed in the prevalence of infection among different age groups.

## DISCUSSION

The exact mode of transmission of bacterium is not known. Epidemiological evidences indicate that person to person transmission of H. pylori may occur either fecal - oral or oral-oral routes<sup>25)</sup>. However, at present it is assumed that the most likely mode of spread would be from saliva in childhood<sup>26,27)</sup>. Recent molecular typing studies on isolates from the United kingdom and other countries at the National Collection of Type Cultures (NC TC) showed considerable diversity in strains from different individual, yet multiple isolates from different gastro-duodenal sites in an individual are usually identical and similarities of DNA sequence between isolates from family members indicate that some H. pylori infection are acquired in households during childhood<sup>28)</sup>. Bangladesh is one of the developing countries having a reported highest point prevalence of duodenal ulcer among the population above the age of 15 years<sup>22)</sup>. However, population serological survey on H. pylori infection is not yet undertaken in our setting. Therefore, the present cross-sectional study on these apparently healthy individuals was undertaken to plan a future large-scale seroepidemiological survey on H. pylori in different age and socioeconomic groups.

In the testing process, qualitative assay of *H. pylori* antibody level was made. According to informations obtained from the manufacturer, the sensitivity and specificity for EIAgen is more than 90% in detecting *H. pylori* specific antibody. It compares favourably with the results of other *H. pylori* ELISAs in which 93.8 -100% sensitivity and 79 - 90% specificity were reported<sup>29-31</sup>.

It is also noticed that by the age 20, all were infected. Almost similar seroprevalence rates were observed in Indian and African asymptomatic adult population<sup>32,33</sup>.

However, the present data can not be taken as an exact estimate of our population seropositivity rates, because all age, sex and socioeconomic groups were not included in the study. Another important lacking of this assay was that the used *H. pylori* antigen (s) was not derived from Bangladeshi strains or isolates. Therefore, future large scale seroepidemiological study covering all age, sex and socioeconomic groups and by using our own *H. pylori* strain derived antigen (s) would likely to provide exact status.

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### Erratum

Title "Hepatitis C virus and human T cell leukemia virus type 1 infection does not occur through blood transfusion in hemodialysis unites and its prevention" (*Epidemiol* 7,No.3,1997;183) was corrected by the authors as "Hepatitis C virus and human T cell leukemia virus type 1 infection without blood transfusion in hemodialysis units and its prevention".

Contents " I would like to introduce the previous studies <sup>2,3,4</sup> in the iournal which showed the HBs-Ag positive rate of hemodialysis patients did not increase with the duration of hemodiaysis therapy while their positive rate of HCV antibody or the human T cell leukemia virus type 1 antibody increased even in patients who did not xxxxxxxxxx blood transfusion." (*Epidemiol* 7, No.3, 1997;183) was corrected by the author as " I would like to introduce the previous studies <sup>2,3,4</sup> in the journal which showed the HBs-Ag positive rate of hemodialysis patients did not increase with the duration of hemodialysis therapy while their positive rate of HCV antibody or the human T cell leukemia virus type 1 antibody increased even in patients who did not received blood transfusion."