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Prevalence of hepatitis C virus infection in rural adult population of Bangladesh

Hepatitis C virus (HCV) infection is an important global health problem and may cause acute and chronic infection in man and is one of the most common causes of chronic liver disease, cirrhosis of liver and hepatocellular carcinoma. HCV accounts for 40% of chronic liver disease[1]. It is estimated that about 3% of global population is infected with HCV although prevalence ranges from 0.1 to more than 12%, depending on country which equals to approximately 170 million chronic carriers worldwide[2]. In United States, the overall HCV prevalence rate is 1.8%, with a relatively high prevalence among African Americans (3.2%) and Hispanic (2.1%) than the non-Hispanic white (1.5%).[3]

A study among truck driver and helper in Bangladesh showed the prevalence of HCV infection was <1%[4]. In another study the prevalence of HCV infection was higher among intravenous drug abusers (24.8%) in comparison to non-drug abusers (5.8%)[5].

Khan et al[6] showed that 2.4% of Bangladeshi professional blood donors were anti-HCV positive whereas it was 0.6% of Japanese voluntary blood donors.

We conducted a cross-sectional population based study over the population living village of Kaligonj Upazilla under the District Gazipur, Bangladesh during the period from July 2005 to June 2006.

Inclusion criteria were apparently healthy adult voluntarily participants aged ≥18 years and both male and female were included on the basis of availability.

Exclusion criteria were age less than 18 years irrespective of sex, subject unwilling to participate and history of jaundice within last 6 months.

Socio-demographic data such as age, sex, marital status, occupation, education, yearly income and smoking habit were recorded. Risk factors for HCV infection were analyzed using a questionnaire including previous history of childhood immunization by old method using unsterilized and /or re-used needle, history of needle prick, major operation, dearntal procedure, shaving pattern, jaundice of parents- brothers, sisters, method of circumcision and history of intravenous drug abuse.

Data were collected using a predesigned, field tested structured questionnaire. All variable were noted in data collection sheet. Data sheet of population studied was filled-up after face to face interview. Prior to interview a public motivation program was conducted for ensuring community participation. During counseling special emphasis was given to clinical outcome of HCV infection. Risk, discomfort, confidentiality, privacy about collection of blood and data in the ethical point of view were discussed with the participants. Objectives of study discussed thoroughly. After recording of data 5 ml of blood from each individual were collected aseptically using disposal syringe and serum was separated by centrifuge machine and transported to Dhaka where serum was stored in deep frieze at-20°C. Then the sera were tested for anti-HCV by a commercial kit according to standard operating procedure of manufactures instruction (Biotec HCV rapid device, UK). Sensitivity was 96.8% and specificity was 99%. All anti-HCV positive cases were confirmed by ELISA method.

Out of 501 adults, 218 subjects were male and 282 were female. Mean age of subject was 35 ± 14.82 years. Most of subjects were less than 40 years of age (69.4%) (Table I and II). Educational status of study population showed most of the subjects was educated (72%). Most of the subjects (85.4%) had completed EPI coverage. Only 73 (14.6%) subjects were found uncovered by EPI program. Out of 283 females, 194 female subjects were completed their TT vaccination. Overall TT coverage was 68.55% (Table II). Study showed that 279 (55.7%) subjects

had history of reused needle, 73 (14.6%) subjects had history of disposable needle use. In this study 58 (11.6%) subjects had history of more than two time needle pricking and 56 (11.2%) subjects had history of one time needle pricking in last one year (Table III). Three subjects were found to be anti-HCV positive (0.6%) of which two subjects were male. One subject was below 40 years and two subjects were above sixty years of age. Two persons were educated. Among seropositive subject, 2 were farmer and one was housewife. Two subjects had history of barber shaving. One subject had history of more than two times needle pricking in last one year. Two subjects had history of reused needle in life, blood transfusion, drug abuse or jaundice were not present any subject. Multiple regression analysis could not identify any associated risk factor.

Table I: Demographic data

Variable		n/ (%)
Population size	Sex	
	Male	218 (43.5)
	Female	282 (56.5)
Occupation		
	House wife	250 (49.9)
	Farmer	114 (22.8)
	Student	53 (10.6)
	Service holder	46 (9.2)
	Businessman	22 (4.4)
	Day lab our	2 (0.4)
Education		
	Illiterate	142 (28.3)
	Primary	53 (10.6)
	Secondary	100 (20)
	Higher Secondary	31 (6.2)
	Graduate	23 (4.6)
	Post-graduate	16 (3.2)

Table II: Immunization pattern of study population

Variable	Response to question	n (%)
EPI coverage	Yes	482 (85.4)
	No	73 (14.6)
	Total	501(100)
TT coverage by female subjects	Yes	194 (38.7)
	No	44 (8.8)
	N/A	263 (52.4)
	Total	501 (100)

Table III: Frequency of needle pricking in last one year by study population

Pattern of needle prick	n (%)
Two or more times	58 (11.6)
One time	56 (11.2)
Never used	387 (77.2)
Total	501 (100)

There is no documented data on seroprevalence of HCV infection in rural adult population of Bangladesh. In this study we found anti HCV positive in 0.6% cases. This prevalence rate is consistent with that found in study done by Laura Gibney[4], Khan et al[6] and Kuperan P et. al[7]. but lower than that of reported in Australia[8], Japan[9], Malaysia[10], Pakistan[11] and India[12]. Lower prevalence of anti-HCV in this study mighty be due to several factors. Firstly, rural people are less exposed to blood transfusion, needle prick, parental drug addiction and extramarital sexual activities. Secondly, negative anti-HCV does not exclude possibility of having HCV infection. Thirdly, the difference in socio-demographic background of rural population may be a contributing factor. On conclusion, this study shows that prevalence of HCV infection in rural adult population of Bangladesh is 0.6% which is relatively lower than that of developed countries.

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