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Orginal Article

Prevalence of HBsAg and Anti HCV Sero-Positivity among Healthy Bangladeshi Job Seekers in Gulf States and KSA

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Abstract

To measure, the level of Hepatitis-B & Hepatitis-C infections among Job seeker going abroad and to find out the age group who is more vulnerable to Hepatitis-B & Hepatitis-C infection. Cross sectional study was carried out on healthy Bangladeshi Job Seekers in Gulf States and KSA in a medical centre to investigate the prevalence of Hepatitis-B virus (HBV) and Hepatitis-C (HCV) virus infection. At total, 9135 job seekers were examined. The age ranges were 20-46 years (mean ±SD: 29±5 years). Out of 9135 job seekers 213 (2.3%) were found to be positive for Hepatitis-B surface antigen (HBsAg) and 16 (0.18%) were positive for anti HCV. The prevalence of seropositivity was found to be highest among 25-29 age group (42%), followed by 20-24 age group (28%). The prevalence among 30-34, 35-39 and 40+, age groups were 11, 15 and 8 percent respectively. However, there is no significant association between age groups and prevalence of Hepatitis-B and Hepatitis-C ($p>0.5$). The finding of this study revealed that seropositivity for HBV and HCV is quite high in otherwise healthy individuals in Bangladesh. Programmatic strategy must be undertaken to reduce the existing high prevalence of Hepatitis-B and Hepatitis-C infection among Bangladeshi people

Introduction

According to WHO Bangladesh belongs to intermediate (4%) zone of HBV carrier rate[1] and has an estimated 7.4 million carrier. Not only in Bangladesh, disease due to hepatitis-B virus (HBV) infection is one of the most prevalent public health problems worldwide, particularly in developing countries. An estimated 350 million individuals are HBV carriers worldwide, and the virus kills more than 1 million people globally each year primarily due to the progression of chronic infection to liver cirrhosis and cancer.[2-4] Drug users, especially those injecting intravenously, are at an increased risk of infection with blood borne viruses, including hepatitis B virus (HBV)[5] and Hepatitis-C virus(HCV).[6]

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Effective ways to control HBV and HCV infection include prevention of sexual transmission using physical barriers, screening of the blood supply, discourage sharing of syringes and needles, and immunization with HBV vaccine. In addition, continuous research is to be done for introduction of new and effective vaccine for Hepatitis-C virus. Epidemiological Information about the disease burden is very important for a planned economized and effective vaccination programme. In Bangladesh however, information about the prevalence of HBV infections are inadequate and there is no available data on HCV infection.

All previous studies on HBV infection in Bangladesh were conducted among selected population such as blood donors, drug addicts, pregnant mothers, sex workers or hospitalized patients.[7-11]

In this study, we investigated seropositivity rates of both HBsAg and anti HCV among apparently healthy job seekers presenting for health checkup to a specific diagnostic centre and hospital in Dhaka, Bangladesh.

Materials and methods

All the individuals were examined as per requirements of the employers. However we kept our study confined to seropositivity for HBV and

HCV. This cross sectional study was conducted in Mecca Medical Centre, in Banani Dhaka, Bangladesh, from July 2003- January 2004. The study subjects were apparently healthy job seekers for Gulf States and Kingdom of Saudi Arabia (KSA). A total 9135 job seekers were screened for seropositivity of HBsAg and anti HCV. They came from different districts of Bangladesh.

Procedure

Five millimeter of venous blood was drawn under aseptic conditions from the individuals, sera was separated and stored at -20 degree centigrade until tested for HBsAg and anti HCV. For detection of HBV infection, HBV surface antigen (HBsAg) and antibody (anti-HBs), antibody to HBV core antigen (anti-HBc), and HBVe antigen (HBeAg) and antibody (anti-HBe) were determined using commercially available Enzyme Linked Immuno-sorbant Assay (ELISA) kits (Hepanostika HBsAg Uni-Form II, Hepanostika anti-HBs, Hepanostika anti-HBc, and Hepanostika HBeAg/anti HBe microelisa system, Organon Technika, Holland). For HCV infection, anti HCV antibody was detected usinga third generation ELISA kit (UBI HCV EIA 4.0. Organon Teknika, Holland) The UBI EIA 4.0 users synthetic peptides corresponding to highly antigenic segments of core, NS3, NS4 and NS5 region of the HCV genome. Kit specifications were strictly followed for determining the positive cut-off values. Editing and coding was done after confirming and reconfirming the results. Blood samples were collected into vacuum tubes and sera were separated within two hours of Venepuncture and preserved in 80°C until measurements of antibodies according to the standard methods. Collection of blood was performed, by the experienced technicians of Modern Diagnostic Centre Ltd.

Data entry and Analysis

Secondary data analysis was done using information available from hospital record books. Collected data was then cleaned, checked, rechecked. Editing and coding was done. After that, data was entered in to computer for analysis. Descriptive statistics was employed using software SPSS package for data analysis. Groups were compared by Chi-squared tests. Chi square tests at 5% level of significance were attempted to find out the difference in prevalence of Hepatitis B and Hepatitis C, between different age groups.

Result

All the 9135 were male except one. Refusal and exclusion rate was nil. The age ranges were 20-46 years(mean ±SD: 29±5 years). Out of 9135 jobseekers tested, 229 (2.5%) were found to be

Table-I: Prevalence rate of Hepatitis-B and Hepatitis-C in different age groups

Age Group	Disease			Prevalence rate/1000	P value
	Yes	No			
			Total		
20-24	60	2498	2558	23.5	
25-29	93	3744	3837	24.2	>0.5
30-34	32	974	1006	31.8	
35-39	36	1334	1370	26.3	
40+	8	357	365	21.9	
Total	229	8907	9135	25.1	

Prevalence rate is highest among 30-34 groups, followed by 35-39, 25-29, 20-24 and 40+ age gooups respectively (Table: II). However, there is no significant relationship between the prevalence rates and the age group distribution (Table: II).

Table-II: shows the age group distribution of Hepatitis-B infections.

Age group	Number (n)	%
20-24	58	27.2
25-29	89	42
30-34	25	11
35-40	33	15
40+	8	4
TOTAL	213	100

positive for either for Hepatitis-B or Hepatitis-C (Table: I).

Among the positive cases, 213 were found to be positive for only Hepatitis-B and 16 were positive for HCV (Table II-III). The prevalence rate was 2.3% for Hepatitis-B and 0.18 % for Hepatitis-C. In the midst of Hepatitis-B infection, highest numbers of cases were reported from 25-29 age groups 42 %, followed by 20-24 age groups 27%, 15%, 30-34 age 35-40 groups 11% and 40 + age groups 4% (Table II). On the other hand amongst the Hepatitis-C infection highest numbers of case

Table-III: shows the age group distribution of Hepatitis-C infections.

Age group	Number (n)	%
20-24	2	12.5
25-29	4	25
30-34	7	43.75
35-40	3	18.75
40+	0	0
TOTAL	16	100

were reported from 20-34 age groups 43.75 %, followed by 25-30, 35-40 and 20-25 age groups respectively (Table III).

Most of the Hepatitis-B positive cases were reported from Dhaka Division (53.99%), followed by Chittagong Division (26.76%). Cases from Rajshahi, Khulna, Barisal and Sylhet divisions were 4.69, 4.69, 1.88 and 7.98% respectively (Table IV).

On the other hand, Hepatitis-C cases were also reported highest from Dhaka Division (62.5%), followed by Chittagong Division (18.85%). Among the other Divisions, Hepatitis-C was reported 12.5% from Rajshahi Division and 6.25 % from Khulna Division (Table: V).

Discussion

The incidence of seropositivity for HBsAg and anti HCV among apparently healthy job seekers is still very high. People are more vulnerable to HBV than HCV infection. Our findings show that the prevalence of HBV infection is 2.3% among the apparently healthy group of people and falls within the varying range of HBsAg prevalence (2.3% to 9.7%) reported by Khan and colleagues.[12] A previous study by Islam et al, done in two decades before, found 7.8 prevalence of HBsAg in similar group of population.[13] Our report is only from one diagnostic centre in Dhaka City, and does not reflect the real problem of viral hepatitis at population level. Moreover a selected group of apparently healthy people of specific age were assessed here. There are high risk groups like truck drivers, intravenous drug users, commercial sex workers etc in are dispersed in the population that are not included in this report. So it is a public health emergency to identify the actual disease burden in the population and to take programmatic strategy for prevention. Perinatal and vertical transmission of HBV in Bangladesh is infrequent as HBeAg positivity among pregnant women with HBV infection is low.[12] Transmission in the pediatric age group is believed to be through horizontal transmission.[14] It is reported that quite a large (20.6%) number of family members of HBsAg positive subjects became infected by household contacts.[15] It is estimated

Table-IV: Area distribution of Hepatitis B cases

Division	Hepatitis-B	%
Dhaka	115	53.9
Chittagong	57	26.7
Rajshahi	10	4.7
Khulna	10	4.7
Barisal	4	1.9
Sylhet	17	7.9
TOTAL	213	100

that there are 19% suspected carriers of HBsAg in Bangladesh.[16] In the light of the above, programmatic strategies must be undertaken to reduce the existing high prevalence rates in both Hepatitis-B and Hepatitis-C infections. HBV vaccination has been integrated into the exiting EPI program. Since prevalence of HBV infection is found to be very high in the present study dealing

Table-V: Area distribution of Hepatitis C cases

Division	Hepatitis-C	%
Dhaka	10	62.5
Chittagong	3	18.8
Rajshahi	2	12.5
Khulna	1	6.3
Barisal	0	
Sylhet	0	
TOTAL	16	100

with only adult apparently healthy individuals as well as with other similar studies.[17-21] It is now high time to include adult male and female sero-negative individuals to the existing EPI program.

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