

PREVALENCE OF INFECTIOUS DISEASES AND DRUG ABUSE AMONG BANGLADESHI WORKERS

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Abstract. Individuals seeking jobs abroad need health fitness certificates before entering into those countries. Medical screening of 43,213 Bangladeshi job seekers (M/F: 42,290/923) was carried out in our reference center during the period August, 1994 to May, 1996. Albeit male predominance, they represented middle and lower middle socio-economic class of the population from all over the country. All were young adults (age: 27.05±3.56 years; mean±SD) applying for job visas to different Asian countries. Physical examination and laboratory investigations including markers for several infectious diseases and drugs of abuse were carried out as required by countries recruiting the workers. Serological tests revealed that 1,884 (4.4%) of individuals were positive for hepatitis B surface antigen (HBsAg), 737 (1.7%) for *Treponema pallidum* hemagglutination (TPHA) and only 83 (0.2%) for antibody to human immunodeficiency virus (anti-HIV). However, we could not confirm any case of infection with HIV. Chest X-ray suggestive of pulmonary tuberculosis was found in 162 (0.4%) and on blood film, malarial parasites could be observed only in 4 cases. Their urine analysis revealed the presence of opiates or cannabinoids in 471 (1.1%) individuals. HBsAg-positive cases ($p = 0.003$) and abuse of opiates ($p = 0.024$) or cannabinoids ($p = 0.002$) were significantly higher among males. TPHA reactivity and chest X-ray suggestive of tuberculosis were found to be higher among opiates ($p = 0.002$ and 0.027) and cannabinoids ($p = 0.000$ for both) abused as well as with increasing age ($p = 0.000$). These results may represent a cross-sectional view of the prevalence of different infectious diseases and abuse of drugs among the young adult population of Bangladesh.

INTRODUCTION

Bangladesh is an overpopulated (755/km²; census 1991) developing country with a burden of unemployment (Bangladesh Bureau of Statistics, 1998, 1999). Therefore, young individuals seek job opportunities abroad, mainly in Asian countries. Health fitness is a prerequisite for such employment. The job seekers need to obtain a certification from local health checkup centers approved by the employing authorities. The criteria for medical check up were set by the ministries of health of the respective countries which includes physical examination and screening for certain communicable diseases as well as drugs of abuse. A group of 43,213 such foreign-bound job seekers were screened in our reference center at Dhaka during the period of 1994-1996. The results may represent an overview of the prevalence of tested infectious diseases and drugs of abuse among middle and lower middle socioeconomic class of young population of

Bangladesh. The findings may also be of importance for designing policies for manpower recruitment from Bangladesh.

MATERIALS AND METHODS

Screening was done of 43,213 young job seekers at the Health Check Center under Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) in Dhaka during the period August, 1994 till May, 1996. The individuals were referred to our center for medical check up by different manpower recruiting agencies. In addition to physical examination, laboratory investigations were performed to exclude hepatitis B, syphilis, HIV infection, pulmonary tuberculosis and malaria. The investigations included tests for hepatitis B surface antigen (HBsAg), rapid plasma reagin (RPR) and *Treponema pallidum* hemagglutination (TPHA), antibody to human immunodeficiency virus (anti-HIV 1+2), chest X-ray and blood film examination respectively. Urine samples were also assayed for drugs of abuse (opiates and cannabinoids).

After physical examination and chest X-ray,

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5 ml of venous blood and 10 ml of urine were collected from each individuals. A thick and thin blood film was also prepared and all the laboratory investigations were performed on the same day. Each serum sample was tested for HBsAg by enzyme-immunoassay (Organon Teknika, The Netherlands or Sorin Biomedica, Italy), RPR by antigen suspension (Sheild Diagnostic, UK) and anti-HIV(1+2) antibody by enzyme-immunoassay (Organon Teknika or Biorad, USA). All RPR positive samples were subsequently tested for TPHA (Sheild Diagnostic, UK). Individuals positive for anti-HIV(1+2) by enzyme immunoassay were referred to National AIDS Committee, Dhaka, Bangladesh for confirmation. Microscopic examination for malarial parasite (MP) was done after Giemsa staining following standard procedure (Cheesebrough, 1987). Urinary opiates and cannabinoids were tested by homogenous immunoassay (Syva Syntech, USA). All laboratory tests were done following manufacturers' instructions.

Statistical analysis

All data were analysed by using the SPSS program (SPSS, Inc, Chicago, IL) and expressed as frequencies or percentages. Comparison between groups was done by chi-square or Student's *t*-test as appropriate.

RESULTS

Among 43,213 individuals screened, the sex ratio was 42,290 : 923 for male and female, mean \pm SD of age was 27.05 \pm 3.56 years, height 164.16 \pm 5.96 cm and weight 51.63 \pm 6.52 kg (Table 1). In serological tests for infectious diseases, 4.4% (1,884/43,213) individuals were found positive for HBsAg, 1.7% (737/43,213) for RPR/TPHA, only 0.2% (83/43,213) for anti-HIV(1+2). Chest X-ray findings suggestive of pulmonary tuberculosis was found in 0.4% (162/43,213) and 4 cases were found to be positive for malarial parasites. In urine analysis, metabolites of opiates were detected in 0.5% (198/43,213), and cannabinoids in 0.7% (311/43,213) cases (Table 2).

Detection of HBsAg (male and female: 4.4% *vs* 2.5%; *p* = 0.003), opiates (0.5% *vs* 0.0%; *p* = 0.024) and cannabinoids (0.7% *vs* 0.0%; *p* = 0.002) were significantly higher among males. However, frequencies for positive anti-HIV (1+2) (0.2% *vs* 0.1%; *p* = 1.000), RPR/TPHA (1.7% *vs* 2.4%; *p* = 0.121) and suggestive chest X-ray (0.4% *vs* 0.2%; *p* = 0.342) were not statistically different in the sex groups (Table 2).

Among drugs abused, 273 (57.96%) were positive for only cannabinoids, 160 (33.97%) for opiates

Table 1
Characteristics of the subjects.

Characters	Total n = 43,213	Male n = 42,290	Female n = 923	t	p-value
Age (mean \pm SD) in years	27.05 \pm 3.56	27.11 \pm 3.54	24.05 \pm 3.59	1.360	0.244
Height (mean \pm SD) in cm	164.16 \pm 5.96	164.43 \pm 5.66	151.56 \pm 5.65	0.198	0.656
Weight (mean \pm SD) in kg	51.63 \pm 6.52	51.77 \pm 6.43	45.06 \pm 6.96	1.315	0.251

Table 2
Frequencies of various investigation findings.

Markers	Total (%) n = 43,213	Male (%) n = 42,290	Female (%) n = 923	χ^2	p-value
HBsAg	1,884 (4.4)	1,861 (4.4)	23 (2.5)	7.892	0.003
Anti-HIV(1+2)	83 (0.2)	82 (0.2)	1 (0.1)	0.345	1.000
RPR/TPHA	737 (1.7)	715 (1.7)	22 (2.4)	2.586	0.121
Opiates	198 (0.5)	198 (0.5)	0 (0.0)	4.341	0.024
Cannabinoids	311 (0.7)	311 (0.7)	0 (0.0)	6.837	0.002
Chest X-ray suggestive of tuberculosis	162 (0.4)	160 (0.4)	2 (0.2)	2.145	0.342

Table 3
Markers of infectious diseases among drug abused.

Markers	Opiates abuse			Cannabinoids abuse		
	+ ve (%)	-ve (%)	p-value	+ ve (%)	-ve (%)	p-value
	n = 198	n = 43,015		n = 311	n = 42,902	
HBsAg	8 (4.0)	1,876 (4.4)	1.000	11 (3.5)	1,873 (4.4)	0.577
Anti-HIV(1+2)	2 (1.0)	81 (0.20)	0.056	2 (0.6)	81 (0.2)	0.120
RPR/TPHA	10 (5.1)	727 (1.7)	0.002	22 (7.1)	715 (1.7)	0.000
Chest X-ray suggestive of tuberculosis	3 (1.5)	159 (0.4)	0.027	7 (2.3)	155 (0.4)	0.000

Table 4
Disease markers and drug abuse among various age groups.

Variables	Age groups (years)				
	< 20	21 - 30	31 - 40	41 - 50	p-value
	n = 714	n = 36,306	n = 6,034	n = 154	
HBsAg	34 (4.8)	1,573 (4.3)	269 (4.5)	8 (5.2)	0.864
Anti HIV (1+2)	1 (0.1)	66 (0.2)	16 (0.3)	0 (0.0)	0.517
RPR/TPHA	8 (1.1)	569 (1.6)	156 (2.6)	4 (2.6)	0.000
Opiates	12 (1.7)	166 (0.5)	17 (0.3)	3 (1.9)	0.000
Cannabinoids	6 (0.8)	253 (0.7)	50 (0.8)	2 (1.3)	0.545
Chest X-ray suggestive of tuberculosis	0 (0.0)	108 (0.3)	52 (0.9)	2 (1.3)	0.000

(Within parenthesis are percentage over column total)

and 38 (8.07%) for both. HBsAg was positive in 4.0% (8/198; $p = 1.00$), anti-HIV (1+2) in 1.0% (2/198; $p = 0.056$), RPR/TPHA in 5.1% (10/198; $p = 0.002$) and chest X-ray suggestive of pulmonary tuberculosis in 1.5% (3/198; $p = 0.027$) among opiates abused (Table 3). On the other hand, in the cannabinoids abused, frequencies for positive HBsAg was 3.5% (11/311; $p = 0.577$), anti-HIV (1+2) 0.6% (2/311; $p = 0.120$), RPR/TPHA 7.1% (22/311; $p = 0.000$) and suggestive chest X-ray 2.3% (7/311; $p = 0.000$) (Table 3). The frequencies of reactive RPR/TPHA ($p = 0.000$) and X-ray suggestive of pulmonary tuberculosis ($p = 0.000$) were higher in the above 30 years age groups (Table 4).

DISCUSSION

Prevalence studies are not always possible to undertake in developing countries like Bangladesh due to huge cost involvement. We have tried to explore the frequencies of several infectious dis-

eases and abuse of opiates and cannabinoids during health checkup of a large number (43,213) of young job seekers. Evidence of hepatitis B was found in 4.4%, syphilis in 1.7%, pulmonary tuberculosis in 0.4% and drug abuse in 1.1%. Although a large population coming from different parts of the country was investigated, the findings may not represent the exact prevalence, because the workers were apparently healthy young individuals selected by the manpower recruiting agencies mostly from middle and lower middle class. Moreover, most (97.86%) of the job seekers were male, so difference in frequencies of different disease markers in sex groups also may not represent the true distribution.

HBsAg was found positive in 4.4% of the screened population, which is similar to the reported prevalence in Bangladesh (Kane, 1994; Rumi *et al*, 1998). The observed lower frequency of HBsAg-positive cases among females is also evident in other studies (Kaur *et al*, 1996). It is the first data regarding serological tests of syphilis

among general populations of Bangladesh. RPR/TPHA was found positive among 1.7% of males and 2.4% of females. This apparently higher incidence among females may be due to a comparatively small number of females in screened population. The estimated national prevalence of tuberculosis in Bangladesh is 5 per 1,000 (Hafez *et al*, 1991). A little lower frequency (0.4%) of suspected chest X-ray was observed in this study as the population was comprised of young and apparently healthy individuals. It is important to note that screening for malarial parasites in peripheral blood films showed a negligible number of positive cases. Therefore, malarial parasite screening in the general population of Bangladesh may not be considered cost-effective.

Test for anti-HIV(1+2) was found to be positive in 83 cases out of 43,213 study population, by enzyme immunoassay. They were not considered for further confirmatory tests because a single positive result in enzyme immunoassays was considered unfit as instructed by the recruiting countries. Anti-HIV tests by enzyme immunoassays may be false positives in many instances; therefore, such positive cases were referred to the National AIDS Committee of Bangladesh for confirmation. This very low frequency of anti-HIV(1+2) positives is consistent with the findings of a recent study on high risk populations of Bangladesh (Sarker *et al*, 1998).

None of the females tested were found positive for drug abuse which may be attributable to socio-cultural factors. The negative finding of drug abuse in females may not be due to age factor, because mean age was statistically similar for both sex groups. As observed, there was an obvious predominance of TPHA-reactive cases and suspected tuberculosis on chest X-ray among drug abused. These two disease markers were also higher in the older age groups. However, drug abuse was not found to be higher among the elderly population. These findings suggest that although drug abuse is associated with syphilis and pulmonary tuberculosis, detection of both the disease markers may also be cumulative with increasing age.

Although the survey was carried among a

selected (apparently healthy, predominantly male and mostly from middle to lower middle socioeconomic class of people) group and therefore, may not be exact representation of the prevalence of infectious diseases and drug abuse in our general population. Nevertheless, these observations are of immense importance for designing policies for manpower recruitment and further population study in Bangladesh.

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