



Results of Viral Hepatitis and Human Immunodeficiency Virus Screening in Afghan Irregular Migrants: A Cross-sectional Study (2011-2019)

Afgan Düzensiz Göçmenlerin Viral Hepatit ve İnsan Bağışıklık Yetersizliği Virüsü Enfeksiyonu Tarama Sonuçları: Kesitsel Çalışma (2011-2019)

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ABSTRACT

Objectives: The aim of the study was to present human immunodeficiency virus (HIV) and hepatitis A, B, and C seroprevalence data in Afghan irregular migrants.

Materials and Methods: This retrospective cross-sectional study was conducted in Erzurum, which had two of Turkey's 28 immigration removal centers, and included 9,197 Afghan irregular migrants of all ages referred to the hospital between January 2011-2019. Continuous data were presented as median (minimum-maximum) values; categorical variables were expressed as frequency (percentage) values.

Results: Seropositivity rates were 5.5% for hepatitis B surface antigen (HBsAg), 1.6% for hepatitis C virus, 94.3% for hepatitis A virus (HAV), and 0.2% for HIV. Rates of HBsAg, anti-hepatitis B core antibody immunoglobulin G (anti-HBc IgG), and anti-HAV positivities were significantly lower in the 0-15 age group, while the rate of anti-HBs positivity was significantly higher in the 0-15 and ≥41 age groups. In the 7,196 immigrants who underwent all three hepatitis B tests (HBsAg, anti-HBs, and anti-HBc IgG), infection was detected in 7.0%, while 87.5% had never encountered hepatitis B or been vaccinated against hepatitis B.

Conclusion: Epidemiological studies on migrant populations are necessary to protect public health in the host country. As there is limited information pertaining to these groups in the literature, having access to health data will be beneficial for physicians who provide medical care to this group.

Keywords: Community health, hepatitis, HIV, irregular migrant, migrant health

ÖZ

Amaç: Afgan düzensiz göçmenlerin hepatit A, B, C ve insan bağışıklık yetmezliği virüsü (HIV) enfeksiyonu seroprevalanslarının sunulması amaçlanmıştır.

Gereç ve Yöntemler: Bu retrospektif kesitsel çalışma, ülkede bulunan 28 geri gönderme merkezinden ikisine sahip olan Erzurum ilinde yürütüldü ve çalışmaya Ocak 2011-2019 tarihleri arasında hastaneye sevk edilen tüm yaşlardan 9.197 Afgan düzensiz göçmen dahil edildi. Sürekli veriler ortanca (en küçük-en büyük), kategorik değişkenler frekans (yüzde) olarak sunuldu.

Bulgular: Hepatit B yüzey antijeni (HBsAg) seropozitifliği %5,5; hepatit C virüs seropozitifliği %1,6; hepatit A virüs (HAV) seropozitifliği %94,3 ve HIV seropozitifliği %0,2 olarak tespit edildi. HBsAg, anti-hepatit B çekirdek antikoru immünoglobulin G (anti-HBc IgG) ve anti-HAV pozitiflik sıklığı 0-15 yaş grubunda anlamlı olarak daha düşük; anti-HBs pozitiflik sıklığı 0-15 ve ≥41 yaş gruplarında anlamlı olarak daha yüksek bulundu. Hepatit B (HBsAg, anti-HBs ve anti-HBc IgG) testlerinin her üçünün de yapıldığı 7.196 göçmende ise hepatit B enfeksiyonu %7,0 sıklıkta bulunurken, göçmenlerin %87,5'inin hepatit B ile karşılaşmadıkları ve/veya hepatit B'ye karşı aşılanmadıkları görülmüştür.

Sonuç: Göçmen nüfus, ev sahibi ülkede toplum sağlığı için epidemiyolojik incelemeler gerektiren bir gruptur. Literatürde bu gruplar ile ilgili verilerin sınırlı olduğu da göz önüne alındığında özellikle bu gruba tıbbi bakım sağlayan hekimlerin sağlık verilerine sahip olması faydalı olacaktır.

Anahtar Kelimeler: Toplum sağlığı, hepatit, HIV, düzensiz göçmenler, göçmen sağlığı

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Introduction

Turkey is used as a transit route by irregular migrants because it lies at the intersection of Asia, Europe, and Africa and acts as a bridge from politically and economically underdeveloped states to affluent Western countries. Turkey may also be the immigration target country for citizens of some nations. Irregular migrants are those who enter a country illegally and stay illegally, or enter legally but stay beyond the time legally permitted.

With a population of more than six million, Afghans comprise the largest irregular migrant group worldwide. Afghanistan has high infant mortality (37.1%) and mortality rates in children under the age of five (62/1,000) and has been ravaged by a decades-long civil war (1). Afghans are also the second largest group of irregular migrants to Turkey, after Syrians (2). According to data from the Directorate General of Migration Management affiliated with the Turkish Ministry of the Interior, the number of Afghan irregular immigrants in Turkey reached 12,248 in 2014, 45,259 in 2017, and 20,486 by June 2020. In the first five months of 2020, a total of 57,505 irregular immigrants were detained (2).

Regional and age- and sex-specific prevalence studies of infectious diseases should be evaluated in order to prevent and control outbreaks that may result from the movements of irregular migrants and to plan vaccination programs. However, due to the situation in Afghanistan, there are no comprehensive data on the prevalence of viral hepatitis and human immunodeficiency virus (HIV) infections there.

The aim of the present study was to present data regarding the seroprevalence of hepatitis A, B, C, (HAV, HBV, HCV) and HIV infection according to age and sex among Afghan irregular immigrants in a province that is one of the migrant entry points into Eastern Turkey.

Materials and Methods

This cross-sectional study was conducted in the Erzurum province, which has two of Turkey's 28 immigration removal centers. The total combined capacity of these centers is 1,500 people. According to data from the General Directorate of Migration Management, Erzurum is one of the seven provinces with the highest numbers of irregular migrants (over 5,000) detected as of the end of 2019 (2). The present study included 9,197 Afghan irregular migrants of all ages referred to the hospital from these two centers between January 2011 and January 2019. The results of HIV and HA, HB, and HC screening tests were recorded retrospectively. This study was approved by the Ethics Committee

of Erzurum Regional Training and Research Hospital (approval number: 2020/04-49, date: 17.02.2020). Informed consent of patients couldn't obtain due to retrospective design of study.

Irregular Migrant Practices in Turkey

Apprehended irregular migrants are detained in the aforementioned "removal centers" until deportation. In these centers, migrants first undergo free health examinations and vaccinations (e.g., measles, hepatitis B, oral poliovirus, combination). If any of the migrants have health needs that exceed the health care capacity of the removal center, they are referred to hospitals and receive free treatment. During admission to the hospital, migrants are screened for infectious diseases such as viral hepatitis (HAV, HBV, HCV) and HIV, the incidence of which are known to increase due to irregular migration (2).

Definitions

The following definitions based on HBV serological indicators were used (3):

- Hepatitis B infection: hepatitis B surface antigen (HBsAg) and anti-hepatitis B core antibody immunoglobulin G (anti-HBc IgG) positive;
- Natural immunity: HBsAg negative, anti-HBc IgG and anti-HBs positive;
- Acquired immunity: HBsAg and anti-HBc IgG negative, anti-HBs positive;
- Never exposed to HBV: HBsAg, anti-HBc IgG, and anti-HBs negative.

Statistical Analysis

All analyses were performed using IBM SPSS Statistics version 19.0 (IBM Corp., Armonk, NY). Continuous data were presented as mean \pm standard deviation and median (minimum-maximum) values, categorical variables were expressed as frequency (percentage) values. The significance of differences between the groups was evaluated using chi-square test. We also conducted Bonferroni correction for the post hoc chi-square analysis. $P < 0.05$ was considered statistically significant.

Results

Of the 9,197 Afghan migrants included in the study, 8,195 (89.1%) were male. The mean age was 23.12 ± 9.67 years and the median age was 21 (0-86) years.

The distribution of HBsAg, anti-HBc IgG, anti-HBs, anti-HCV, anti-HAV, and anti-HIV screening results of the irregular migrants are presented in Table 1.

Table 1. Distribution of HIV and hepatitis A, B, and C screening results of Afghan irregular migrants

	Number screened	Positive n (%*)	Negative n (%*)
HBsAg	8,999	505 (5.5)	8,494 (94.4)
Anti-HBs	8,932	2,171 (24.2)	6,761 (75.7)
Anti-HBc IgG	7,196	700 (9.7)	6,496 (90.3)
Anti-HCV	9,036	146 (1.6)	8,890 (98.4)
Anti-HAV	859	810 (94.3)	49 (5.7)
Anti-HIV	8,131	16 (0.2)	8,115 (99.8)

*Row percentage, HIV: Human immunodeficiency virus, HBsAg: Hepatitis B surface antigen, Anti-HBc IgG: Anti-hepatitis B core antibody immunoglobulin G, HCV: Hepatitis C virus, HAV: Hepatitis A virus

The distribution of HA, HB, and HC and HIV screening results by age groups is presented in Figure 1. The frequency of HBsAg, anti-HBc IgG, and anti-HAV positivity was significantly lower in the 0-15 age group compared to other age groups ($p < 0.001$). The rate of anti-HBc IgG seropositivity was significantly higher in the ≥ 41 age group compared to other age groups ($p < 0.001$; $p = 0.017$; $p = 0.042$, respectively). The frequency of anti-HBs positivity was significantly higher in the 0-15 and ≥ 41 age groups compared to the 16-25 and 26-40 age groups ($p < 0.001$), but did not differ significantly between the 0-15 and ≥ 41 age groups ($p > 0.05$).

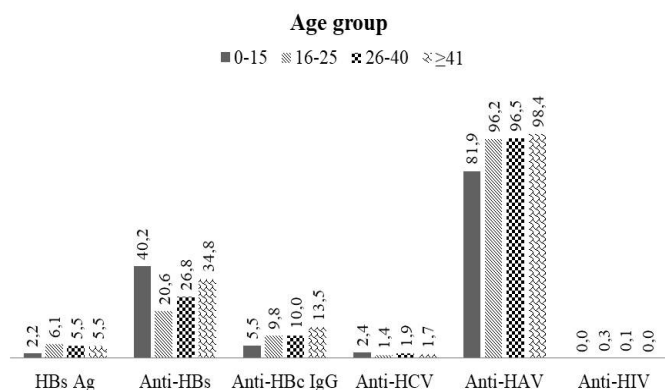


Figure 1. Distribution of the HIV and hepatitis A, B, and C screening results of Afghan irregular migrants by age group (seropositivity, %)

There are 826 (9.0%) people in 0-15 age group; 6050 (65.8%) people in 16-25 age group; 1774 (19.3%) people in 26-40 age group; and 547 (5.9%) people in ≥ 41 age group. HBsAg: Hepatitis B surface antigen, HBc IgG: Hepatitis B core antibody immunoglobulin G, HCV: Hepatitis C virus, HAV: Hepatitis A virus, HIV: Human immunodeficiency virus

The results of HIV and HA, HB, and HC screening among Afghan irregular migrants according to sex are presented in Table 2. Rates of HBsAg, anti-HBc IgG, and anti-HAV positivity were significantly higher, while anti-HBs positivity was significantly lower among males ($p < 0.001$ for all). HBsAg, anti-HBs, and anti-HBc IgG testing was performed on 7,196 migrants to evaluate HBV infection and immune status (Table 3). Of the irregular migrants found to be anti-HIV-positive, two had HBV coinfection, four had natural immunity to HBV, and 10 had never been exposed to HBV. HBV coinfection was detected in nine (6.2%) of the anti-HCV-positive migrants.

Discussion

A quarter century of civil war and political instability has impoverished Afghanistan, leading the Afghan people to lose hope for political and economic recovery and migrate elsewhere to start a new life. According to data from the General Directorate of Migration Management, 446,578 Afghan irregular migrants have been apprehended in Turkey since 2014 (2). The present study examined viral hepatitis and HIV seroprevalence data obtained during general health examinations of detained Afghan irregular migrants.

Data regarding the seroprevalence of hepatitis and HIV in Afghanistan are limited. One study reported low HIV (0.063%) and HCV (0.82%) seroprevalence among 4,750 members of the Afghan national army (4). Of 125,832 blood samples in central blood banks and branches tested between 1989 and 2005, HBsAg and HCV seroprevalence rates were reported to be 1.76% and 0.63%, respectively (5). In the 2019 report from the World Health Organization (WHO) Afghanistan office, it was estimated that there were 5,900 HIV-positive Afghans in 2017 (6). The WHO has

Table 2. Distribution of HIV and hepatitis A, B, and C and screening results of Afghan irregular migrants according to sex

	Sex, n (%*)		p
	Male	Female	
HBsAg	486 (6.1)	19 (2.0)	<0.001
Anti-HBs	1,886 (23.7)	285 (29.6)	<0.001
Anti-HBc IgG	653 (10.2)	47 (6.1)	<0.001
Anti-HCV	128 (1.6)	18 (1.8)	0.540
Anti-HAV	710 (95.0)	100 (86.0)	<0.001
Anti-HIV	16 (100)	-	-

*Positivity percentage in the given sex group, HIV: Human immunodeficiency virus, HBsAg: Hepatitis B surface antigen, Anti-HBc IgG: Anti-hepatitis B core antibody immunoglobulin G, HCV: Hepatitis C virus, HAV: Hepatitis A virus

Table 3. Distribution of hepatitis B virus infection and immune status among Afghan irregular migrants by age

HBV infection/immune status	0-15 years (n, %*)	16-25 years (n, %*)	26-40 years (n, %*)	≥ 41 years (n, %*)	Total (n, %*)
HBV infection	17 (3.0)	362 (7.4)	97 (7.2)	29 (7.1)	505 (7.0)
Natural immunity	10 (1.8)	71 (1.5)	23 (1.7)	23 (5.7)	127 (1.8)
Acquired immunity	57 (10.1)	74 (1.5)	39 (2.9)	31 (7.6)	201 (2.8)
Isolated anti-HBc IgG positivity	4 (0.7)	46 (0.9)	15 (0.8)	3 (0.7)	68 (0.7)
Never exposed to or vaccinated against HBV	474 (84.3)	4,322 (88.7)	1,179 (87.1)	320 (78.8)	6,295 (87.5)

*Positivity percentage in the given age group, HBV: Hepatitis B virus, Anti-HBc IgG: Anti-hepatitis B core antibody immunoglobulin G

reported based on national statistics that the prevalence of HIV is below 0.1% among those 15-49 years of age (7).

Common risk factors for HBV, HCV, and HIV infection include sharing injection equipment, reusing medical equipment and needles in healthcare institutions without appropriate sterilization, and transfusion of unscreened blood and blood products (8,9,10). As the prevalence of viral hepatitis and HIV infection is higher among risk groups than the general population, these groups must be assessed separately. For example, a study done in donors will not reflect the general population, as individuals at high risk for HIV and hepatitis were evaluated and excluded with a questionnaire at the time of blood donation.

Migrants may have a different risk of HBV infection than the general population. Members of this group may also adopt other high-risk behaviors such as drug addiction that can put populations at risk for infectious diseases. In addition, collective and unhygienic living conditions further increase risk (11,12). On the other hand, it is known that migrants leave their home countries because they tend to avoid violence and have the means and opportunity to do so because of their higher socioeconomic status (12,13).

HIV, HCV, and HBsAg seroprevalence rates were determined to be 3.0%, 36.6%, and 6.5%, respectively, in a study of 464 intravenous drug users, who comprise an important risk group in Afghanistan (11). A meta-analysis of the literature evaluating risk groups between October 2003 and 2011 showed that the seroprevalence of HBsAg was 1.9% among 132,981 people screened for HBV and that of HCV was 1.1% among 132,500 screened (14). In another meta-analysis evaluating HC seroprevalence, the prevalence was 0.7% in the general population and 32.6% among intravenous drug users (15). The HBsAg seroprevalence among Afghan immigrants in the USA in the periods 1979-1991 and 2007-2008 was 4.1% and 5.0%, respectively, and was 60.8% (45/74) among Afghan refugees in Dalaki, Iran (12,13,16). In 2003, the HBsAg seroprevalence among Afghan migrants in Belochistan, Pakistan was found to be 8.3% (n=903) (17). These differences were attributed to the fact that immigrants able to reach the USA were of higher socioeconomic status and the USA likely had better health practices (10,12). In contrast, the high HBsAg seroprevalence among migrants in Belochistan was associated with unsafe intravenous drug use (13,16). For Afghan nationals in Iran, it has been stated that the HBsAg seroprevalence is unexpectedly high and health screenings should be conducted before placing migrants in camps.

The HBsAg seroprevalence in our study was higher than that in studies of the general population in Afghanistan and similar to the results of Afghan immigrants in the USA. The seroprevalence rates of HBV, HCV, and HIV infections were found to be lower than those previously reported in high-risk groups but higher than in the general population. This has been interpreted as an indicator that migrants constitute a risk group for these infections (12,16,17).

Between 1990 and 2005 in the central Asian and Caucasus countries, it was determined that the approximate HBsAg seroprevalence was 5% among young adults and decreased with age (18). We also observed in the present study that HBsAg seropositivity was highest in the 16-25 age group and decreased in the older age groups. In another study, the HBsAg seroprevalence in children under the age of five was found to be 0.3% and showed

a sharp increase (1.8%) over the age of 15 (14). Similarly, the HBsAg seroprevalence in our study was lowest under the age of 15 compared to other groups. In contrast, anti-HBs positivity was higher in those under the age of 15 compared to the other age groups. This may be a result of vaccination programs started for those under 15 years of age. In the WHO health profile assessment of Afghanistan, the HB vaccination rate among one-year-olds was reported to be 71.0% in 2013 (19). However, the acquired immunity detected in our study for children under the age of 15 (10.1%) was very low compared to WHO data. In those over 40 years of age, both anti-HBc IgG and anti-HBs positivity were found to be higher than in the other age groups. We believe this is a result of natural immunity increasing with age in individuals who were not vaccinated against HBV and were susceptible to the disease.

In our study anti-HBc IgG positivity is low compared to HBsAg positives. Anti-HBc IgG can be found positive in the absence of HBsAg in most patients with acquired immunity. In a small proportion of these patients, isolated anti-HBc can also be detected in plasma. Apart from that, in those infected with HBV, HBsAg may be negative due to the point mutation in the precore region. All these donors have a high level of anti-HBc (20). This difference is thought to arise from here.

In another study, the prevalence of HCV infection gradually decreased after 60 years of age. It has been emphasized that this may be due to lack of economic power leading to reduced physical mobility and fewer examinations of older adults (21). In our study, we detected no age-based difference in HCV infection. Our data showed that all of the HIV-infected migrants were in the 15-40 age group, which is the most common period for infection.

Anti-HIV, HBsAg and anti-HCV seroprevalences of Afghan refugees were found to be 0%, 3.71% and 2.06%, respectively, in a study carried out with migrants in Erzincan province in our region. Seroprevalences in both studies were similar, with minor differences attributed to the sample size of the studies (727 vs 9,197) (22).

HAV is a common infectious agent worldwide, but the prevalence depends on local health conditions. HAV can be transmitted through contaminated water, food, and with close contact via the fecal-oral route. In low- and middle-income countries, HAV infection is usually asymptomatic in childhood and adults generally have immunity (10). It has been shown that HAV infection is common and that environmental and socioeconomic factors play an important role in its transmission. While 50% of the under-5 population was found to be anti-HAV-positive, it was shown that this rate increased rapidly with age and reached 100% among those over the age of 15 in Ethiopia (23). Our findings that hepatitis A positivity was lowest in the 0-15 age group support these data. Considering that the data in our study were based on the results of screening performed at the start of their migration, it can be assumed that the adults were infected with HAV before emigrating from Afghanistan. On the other hand, the low anti-HAV seropositivity rate in the under-15 population could be stemming from the lack of access to vaccines in this age group.

Study Limitations

The fact that this study was conducted on a specific group using retrospective data can be considered a limitation. However, the inclusion of a large sample population is an important advantage

of the study. Similarly, the analysis of different age groups provides important information both about active disease and immunization status.

Conclusion

The migrant population represents an important group that requires epidemiological study to ensure public health in nearly every country. As there are limited information pertaining these groups in the literature, having health data will be especially beneficial for physicians who provide medical care to this group. In addition, these data will facilitate immunization of these sensitive groups and thereby potentially reduce outbreaks and treatment costs for countries such as Turkey, where all migrant health expenses are covered by the state.

In our province, Afghans constitute this particular immigrant group. In line with the results of our study, it is understood that this group is susceptible to HBV and HAV infections. For this reason, it is important for Afghans to complete their vaccination quickly when they first come together with the health service.

Ethics

Ethics Committee Approval: This study was approved by the Ethics Committee of Erzurum Regional Training and Research Hospital (approval number: 2020/04-49, date: 17.02.2020).

Informed Consent: Informed consent of patients couldn't obtain due to retrospective design of study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: E.F.K., Design: E.F.K., Data Collection or Processing: Ö.K., Analysis or Interpretation: E.F.K., Literature Search: Ö.K., Writing: E.F.K., Ö.K., I.A.K., Critical Review - I.A.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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