

Prevalence of HIVAb, HbsAg, and HCVAb in Iranian Blood Donors in 2018: A Short Communication

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Abstract

Background: The prevalence of infections among general population can affect the prevalence among blood donors. Due to the importance of blood safety, this study was conducted to estimate the prevalence of HIV, HBV, and HCV in donated bloods in Iran in 2018.

Methods: Using information of 1,308,284 blood donors, we designed this cross-sectional study to estimate the prevalence of transfusion-transmitted infections (TTIs) in Iranian blood donors. All the prevalence was reported per 100,000 population.

Results: HIV prevalence in blood donors was about 2 per 100,000 (95% CI: 1.999, 2.001) population. Prevalence of HBV and HCV was 53(95% CI: 52.999-53.00) and 26 (95% CI: 25.999-26.001), respectively.

Conclusion: It seems that the screening of volunteers would defer many people who may have been infected with TTIs; as a result, people with the least risk of being infected are selected to donate blood.

Notice: All of these infected bloods were detected and discarded from the blood donation chain.

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Introduction

The prevalence of HIV, HBV, and HCV in donated bloods has been proven to be the most important blood safety indicators since they are transmissible from one person to another through blood or its products.¹

Dealing with these transfusion transmitted infections (TTIs) is a major challenge in blood transfusion management, so the entire process of donating from donor to recipient must be monitored

and evaluated according to the hemovigilance guidelines. According to the reports, the prevalence of HBV and HCV is estimated 2.2% and 1.6% in Iran, and about 61000 cases infected with HIV live there.²

Not everyone who refers to the blood transfusion centers can donate blood. All people are screened against transfusion transmitted infections, but some bloods could be infected with HIV, HBV, and HCV which are detected and excluded from the donation chain. Also, everyone who was infected by these TTIs

is deferred forever.³

The prevalence of infections among general population can affect the prevalence among blood donors, so, due to the importance of blood safety, this study was done to estimate the prevalence of HIV, HBV, and HCV in donated bloods in Iran in 2018.

Methods

Study Design

This cross-sectional study was conducted to estimate the prevalence of TTIs in Iranian blood donors. The data were collected by transfusion organization in Iran in 2018. The prevalence of TTIs in blood donors was calculated by equation 1.

Prevalence of TTI in blood donors =

$$\frac{\text{Number of TTIs Infection}}{\text{Number of all Blood Donors}} * 100 / 1000$$

Donor Selection

Before blood donation, each volunteer is interviewed by a qualified interviewer; in case of any risk factors or any history of risky behaviors, he/she will not be eligible to donate blood.^{4,5} In the next step, donated bloods are going to be screened for TTIs. These tests investigate screening the HCV Ab, HBsAg and HIV (Ag/Ab), using the ELISE test according to the Iranian Blood Transfusion Organization guideline.

Results

In 2018, 2093197 blood donations were recorded; on average, each donor made about 1.6 donations during that year. 23.8% of all volunteers who referred to donate blood were not able to do so due to physical situation or high-risk behaviors history. The age group of 20- 30 years old (34%), group of males (96%), and O+ blood type group (33%) were the most frequent groups among Iranian blood donors (A+:27%, A-:3%, B+:22%, B-:2%, AB+:7%, AB-:1%, O+:33%, O-:5%).

Out of 1,308,284 blood donors, 26 (2 per 100,000 [95% CI: 1.999, 2.001]), 693(53 per 100,000 [95% CI: 52.999-53.00]), and 340 (26 per 100,000 [95% CI: 25.999-26.001]) people who were respectively infected with HIV, HBV, and HCV donated blood.

Discussion

According to the literature, the prevalence of HIV, HBV, and HCV is 75, 2158, and 300 per 100,000 Iranian general population, respectively;² they are 2, 53, and 26 in blood donors population, so if all the population could donate blood, the prevalence would be the same in these two groups.

Out of every 100 TTIs infected cases who refer to

donate blood, fewer than 10, 3, and 3 people can donate blood because of HCV, HBV, and HIV, respectively. All of these infected bloods were detected and discarded from the blood donation chain.

The first step in the screening process of volunteers is the interview by a physician, in which a physician asks some questions about high-risk behaviors and if he detects any, the volunteer is deferred from blood donation.⁶

In the next step, which is done in privacy situation, the voluntary can declare not to use her/his blood. It seems that after two steps of screening, many people who refer to donate are not allowed to do so.⁷ At last, all blood packs are tested, and infected bloods are discarded. These activities decrease the probability of infected blood packs and improve the safety of bloods.⁵ In addition, in Iran, all blood donations are done for charity. However, it seems that the people with low socioeconomic status do not have any motivation to donate blood. As these people do not have a healthy lifecycle, they might be infected with TTIs.²

Conclusion

It seems the screening of volunteers would defer many people who may have been infected with TTIs; as a result, people with the least risk of being infected are selected to donate blood.

Ethical Approval

In this study, all data were extracted from the national donor registration system. The data were cumulative and no individual data from donors was available. The current study was approved by the ethics committee at Kerman University of Medical Sciences, Iran (Ethical Code: IR.KMU.REC.1397.401).

Conflict of Interest: None declared.

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