

INVESTIGATING THE PREVALENCE OF HBV AMONG BLOOD DONORS IN THE CENTRAL BLOOD BANK OF KABUL CITY, AFGHANISTAN 2022

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Abstract

Introduction: Hepatitis B Virus (HBV) is one of the most common hepatitis in humans. These viral infections lead to dysfunction of the liver and sometimes even lead to liver cancer. HBV is also transmitted through blood, so blood must first be evaluated to be free from HBV during blood transfusion. The prevalence of HBV among blood donors is considered one of the risk factors for transmission of this virus and requires caution.

Aim and methods: The aim of writing this thesis is to investigate the prevalence of HBV among blood donors in the central blood bank, taking into account age, gender, marital status, residence, and history of blood donation. This study is a prospective study, the required data of which was collected from the 6 months of 2022, from blood donors in the central blood bank of Kabul city.

Results: According to the findings of this study, the prevalence of HBV among blood donors in the central blood bank of Kabul, out of 6406 blood donors, 90 positive cases (1.4%) have been observed. The highest incidence of HBV was recorded in the age group of 18 to 28 years with 32 cases (35.3%). Out of 90 registered cases of HBV, 88 of them were related to the male category, and the highest recorded statistics were reported among people with married status (83.3%). Most of the people with HBV are residents of Kabul City (70%) and the majority of HBV-positive cases have been registered without a history of donating blood (76.6%).

Conclusion: The prevalence of HBV among blood donors in the central blood bank is relatively high, and it should be prevented by observing the principles of hygiene and public awareness about this disease.

Keywords: HBV infection, Blood donor, and Central Blood Bank of Kabul, Afghanistan.



Introduction

Blood is one of the most important connective tissues in the body, which performs many activities in the body and constitutes the largest tissue in the body. Blood plays an essential role in transporting substances in the body, and as a result of the reduction of this essential tissue, dangerous problems arise in the body. Nowadays, with the advancement and growth of technology, especially in medical dimensions, blood transfusion has become one of the basic discussions and has caused the lives of many patients to be saved all over the world. Unfortunately, it is not possible to transfer blood from one person to another without providing laboratory tests, because the patient's immunity must be considered in the first step. Many diseases are transmitted from one person to another person through blood, so the transfer of blood from one person to another requires compliance with some safety precautions. Today, although mankind is at the peak of technology and has been able to make important discoveries, the modern life of mankind has been affected by many factors. One of these important factors can be considered infections. The spread of infections in the world has affected human life in different dimensions. Infections have had a significant impact on social, cultural, economic, and even educational life. Viral hepatitis can be considered one of the most important infections today, the rate of which is spreading. These infections have affected human life in different dimensions and since the factors responsible for its prevalence are many, the number of people suffering from these infections is expanding. Viral hepatitis is one of the common infections all over the world and it is important to consider the fast speed of spreading this virus and infecting humans. According to the reports received in 2015 alone, more than 10 million new cases of this viral infection were registered in the world. Of these, 1.34 million patients with hepatitis have died in the world (Belopolskaya et al., 2021). Along with the types of viruses that cause hepatitis (A, B, C, D, and E) in humans, hepatitis B is considered one of the major health challenges around the world. Taking into account the statistics received by the World Health Organization in 2015, 257 million people were infected with HBV. The spread of this virus has been observed in developing countries as well as developed countries, but the prevalence rate is different. The prevalence of HBV among blood donors exists in developing and developed countries, but the difference is that it has higher statistics in developing countries than in developed countries. For example, the prevalence of HBV among blood donors in India was reported to be 13.8% in 2006, but this figure was reduced to 6.9% in 2008 (Nkrumh, 2011). The prevalence of HBV among blood donors is relatively lower in developed countries. For example, in China, the prevalence of HBV among blood donors in 2017 was reported as 0.13% (Li et al., 2017). Unfortunately, in Afghanistan, there are no accurate statistics on the prevalence of HBV among blood donors, so with this study, the field of research on the prevalence of HBV among blood donors in our country can be facilitated. The prevalence of HBV among blood donors varies around the world. In Damiana's study, the prevalence of this virus in Canada among blood donors was reported as 0.152%. This statistic is lower than the studies conducted in India, Pakistan, and Iran. The prevalence of HBV among blood donors during various studies has been observed in Iran at 0.3%, in Pakistan at 0.1%, in the United States of America at 3.8%, and in India at 1%. 1.5 million new cases of HBV disease have been registered worldwide during 2019-2020, of which the most cases are related to African countries with 990,000 cases, Southeast Asian countries with 260,000 cases, countries around the Pacific Ocean with 140,000 cases and countries Eastern Mediterranean regions have the highest number of HBV cases by registering 100,000 new cases, while the prevalence of this disease in developed countries was lower during 2019-2020, as the prevalence of this disease in American countries in In 2020, approximately 10,000 cases and



19,000 cases have been recorded in European countries. HBV infections are increased by some effective factors. Considering the course of the disease, the following can be considered the main risk factors of this disease: 1) Administration of blood and other fluids through transfusion: It is one of the major risk factors for transmitting the virus. The rate of transmission of this virus through the transfer of blood and other fluids from an infected person to a healthy person is observed in almost all societies because the antigens of this virus are present in the body fluids of a sick person and the rate of transmission is high. 2) Dangerous sexual relations: Dangerous and unprotected sexual relations are also considered as one of the risk factors of transmitting this virus. The use of several sexual partners at the same time, especially in developed societies, constitutes the major risk factor for the disease. Failure to use precautions during sex (condoms) can also be a major factor in the transmission of this disease from a sick person to a healthy person, so the spread of this disease can be prevented by taking appropriate measures during sexual relations. 3) Narcotic drug intoxication: This risk factor is the main cause of disease transmission among addicts who use a needle for drug intoxication. The transmission of the disease by drug erysipelas and sharing needles is also observed in developing and developed countries. 4) Hospitalization: HBV infections are also transmitted in health centers. As a result of long-term hospitalization of people in health centers (especially health centers that deal with infectious and hepatitis patients), there is also the possibility of infection. 5) Surgery: There is also a rate of transmission of infection through surgery and the use of surgical tools that have not been properly sterilized. The prevalence of HBV has been reported to be higher among people who had a history of surgery (jaw and oral surgery) (Gedefaw et al., 2019). In a study conducted by Li et al. in 2017 from China, in which the required information was collected from 6 major health centers that donate blood throughout China, the prevalence of HBV among blood donors in these 6 major centers Sahi has been reported as 0.13, 0.078, 0.16, 0.07, 0.20 and 0.25% respectively (Li et al., 2017). Also, in a study conducted by Nkrumh and his colleagues in 2011 from India on 2773 blood donors (92.2% men and 7.8% women) during the years 2006 to 2007, the prevalence of HBV among blood donors in 2006 was about 13.8%, but in 2007, it shows the prevalence rate to 11.8%. The prevalence of HBV among donors in 2008 was reported at 6.9%. The prevalence of HBV in women is higher than in men, so that in 2006, about 21.4% of women donating blood were infected with HBV (Nkrumh et al., 2011). In another study, conducted by Damiana and his colleagues in 1973 from Canada on 212,622 blood donors, shows that 325 blood donors (0.152%) were infected with HBV. Among these, 276 positive cases are related to the male class and 49 cases are related to the female class. The highest age category of people infected with HBV in the male category is between the ages of 21 and 25 years with a percentage of 26.5%. However, among females, the highest number of hepatitis infections has been reported in the age range between 21 and 30 years (4.3%) (Damiana et al, 1973).

Another study conducted by Mashewari and his colleagues in 2012 in India on 9100 participants in blood donation (92.29% of them are males and 7.7% of them are females), shows that the prevalence of HBV Among blood donors was reported in 91 people (1%). Although the prevalence of HBV among blood donors in this study is relatively lower, in a study conducted in Nigeria, this rate was recorded up to 13%. Also, in the country of Bengal, 18.3% of blood donors have HBV and this statistic is very dangerous (Mashewari et al., 2012). Also, in another study conducted in the United States of America by Baptiste and his colleagues in 2019, the prevalence of HBV among blood donors between 2005 and 2014 was investigated. In this study, the data of 198,758 blood donors were used. About 3.80% of blood donors were infected with HBV (Baptiste et al., 2019).



Also, another study conducted by Bhatti and his colleagues in Pakistan in 2022 on 120,968 blood donors (who went to health centers or blood banks throughout Pakistan), shows that (99 percent of sharing donors were male), only 3 blood donors were infected with HBV, according to the statistics of HBV infection in this study, 0.1% was recorded (Bhatti et al., 2022), (Alzahrani et al, 2019).

Aim, Methods and Analyzing:

The main aim of this research is to investigate the prevalence of HBV among blood donors in the city of Kabul, who refer to the central blood bank. The target population in this study is all the people who refer to donate blood at the central blood bank in Kabul city. The samples used in this study are from the files of people referring to the central blood bank. The required data after collected, analyzed by SPSS.27.

Results:

In this study, 6406 blood donors visited the Central Blood Bank in Kabul from the first 6 months of 2022. Among the patients, 196 were female (3.06%) and the remaining 6210 were male (96.94%). Among the 6406 blood donors, 90 positive cases (1.4%) have been observed. Considering the objectives of this study, the following results were obtained:

1) Age: In this study, 90 positive cases of hepatitis B virus have been observed among blood donors, of which the most cases were among the age categories between 18 and 28 years old, 32 cases (35.3%), 29 to 38 year, 31 cases (34.4%), 39 to 58 years, 14 cases (15.5%), 49 to 58 years, 9 cases (10%), and 59 to 68 years, 4 cases (4.6%).

2) Gender: In this study, out of 90 positive cases of hepatitis B virus registered among blood donors, 88 of them were male (97.7%) and only 2 positive cases were female (0.3%). Also, the prevalence of this virus among blood donors has been observed for the female category (1.02%) and the male category (1.41%).

3) Marital status: Out of 90 positive hepatitis B cases among blood donors, 75 cases were married (83.3%) and 15 cases were single, (16.7%) of the total number of patients. The prevalence of this virus was observed among married patients (1.59%) and among single patients (0.88%).

4) Previous history: Among the 90 positive cases of HBV among blood donors in this study, 69 positive cases (76.6%) had no history of donating blood, but 21 positive cases (23.4%) had a history of donating blood. Also, the overall prevalence of this virus has been observed in people without a history of blood donation (1.56%) and people with a history of blood donation (1.00%).

5) Residence (province): In this study, out of 90 positive cases of HBV among blood donors, 63 cases (70%) were residents of Kabul city, 6 cases were residents of Nangarhar province, 3 cases were residents of Maidan Wardak province, and 5, 2, 3, 7 and One case were a resident of Paktia, Baghlan, Takhar, Herat, and Ghazni provinces. General information of all patients provided in table (1):

Table (1): general information of patients

General information	Frequency (n)	Percent (%)
General information	Frequency (n)	Percent (%)



Age (years)		
18-28	32	35.30
29-38	31	34.40
39-48	14	15.50
49-58	9	10
59-68	4	4.60
Gender		
Male	88	97.70
Female	2	0.30
Marital status		
Married	75	83.30
Single	15	16.70
Donation history		
Yes	21	23.40
No	69	76.60
Residence (Province)		
Kabul	63	70.0
Herat	7	7.80
Others	20	22.20

Discussion

According to the statistics obtained in this study, the prevalence of HBV among blood donors was (1.4%), this statistic is almost similar to the statistics obtained in the studies conducted in India (1%), but it is higher than the prevalence in other countries. Such as Pakistan (0.1%), Iran (0.3%), China (0.25%), and Canada (0.152%). The reason for the increased prevalence in the studied community is the lack of sufficient facilities, the lack of access to health centers for testing, and the lack of public awareness for the people, but the prevalence of HBV in this study, compared to the studies conducted in the United States of America (3.8%) and Saudi Arabia (3.2%) is less, which can be because more people do not go to health centers in the country and the increased risk of various factors of this disease in the countries of America and Saudi Arabia. In this study, the majority of participants were from the male category (97.70%), which is almost similar to the statistics and findings of the studies conducted in India (92.2%) and (92.29%). Also, according to the studies conducted in Pakistan, (99%) of the participants belong to the male category. The reason for more clients from the male class and fewer clients from the female class can be seen as social, cultural, and conflicting conditions. According to the statistics received from this study, the prevalence of HBV has been observed in the female category (1.02%) and the male category (1.41%), which is higher than the statistics received from Canada for the male category (0.129%). For the female category (0.230%), it is the difference in statistics can be attributed to different social, cultural, economic, and political conditions in different countries. The prevalence of HBV among blood donors in this study was observed mostly in the age category between 18 and 28 years (35.3%), which is almost similar to the statistics provided by studies in Canada. The prevalence of HBV among blood donors in Canada has been reported to be higher in the age category between 21 and 25 years (26.5%). The reason for this similarity in statistics can be seen as the common risk factors of the disease and being more susceptible to these risk factors. In this study, the prevalence of HBV among married blood donors was higher (1.59%), which is similar to the statistics received from India (1.1%), because the prevalence of this virus is higher among couples and it is also transmitted through sexual intercourse.



Conclusion

According to the findings of this study, the prevalence of HBV among blood donors in Kabul Central Blood Bank is 1.40%. The majority of people suffering from this viral disease were between 18 and 38 years old, and the majority were male. Also, the prevalence of HBV is higher among married people than single people, and the majority of infected people are residents of Kabul Province, and the majority have not had a history of donating blood.

Conflict of interest

None

Financial sponsor

None

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