

## PREVALENCE OF BLOOD BORNE DISEASES AMONG BLOOD DONORS IN DISTRICT SWAT

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### ABSTRACT

**Background:** Every year, 120 million units of blood are donated globally. Individuals who donate blood are surely healthy individual. However, there may be a significant chance that receivers of improperly screened blood will contract blood-borne diseases.

**Objective:** The study was aimed to evaluate the frequency of blood borne diseases among blood donors in district Swat.

**Methodology:** This cross-sectional study was conducted by the department of microbiology, Government Degree College Madyan Swat. The study duration was six months from August 2023 to January 2024. The frequency of Syphilis, Malaria, HIV, HBV, and HCV in samples of blood donors was determined by using immune-chromatographic technique. All the data was entered and analyzed by using excel sheet.

**Results:** This study includes 400 participants based on the inclusion criteria, where 100 (25%) were female and 300 (75%) were male. The age ranged was from 20 to 60 years. Over all the donors tested positive for HBV were 60 (15%), those who were positive for HCV were 120 (30%). Furthermore donors positive for HIV were 7 (1.75%). Moreover the donors positive for malaria were 70 (17.5%). And donors positive for syphilis were 30 (7.5%). Nearly the most affected age group was > 26 and < 50 years.

**Conclusion:** The current study's findings regarding the prevalence of TTIs (Transfusion Transmitted Infections) among blood donors indicate that there is still significant threat to blood safety in Pakistan. Majority of donors were male (75%). The most common TTI infection was HCV (30%), followed by Malaria (17.5%) and HBV (15%). HIV (1.75%) and Syphilis (7.5%) was less prevalent.

**Keywords:** Prevalence, HIV, HCV, HBV

### INTRODUCTION

Every year, 120 million units of blood are donated globally [1]. Individuals who donate blood are surely healthy individual. However, there may be a significant chance that receivers of improperly screened blood will contract blood-borne diseases [2]. The primary blood safety concern is the high incidence of infections

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transmitted through transfusions (TTI's) in blood which are donated. Due to weak screening and a higher prevalence of TTIs among donors, middle- and low-income nations are more likely to have low blood safety [3,4]. The primary drivers of TTIs are HIV, hepatitis B virus (HBV), hepatitis C virus (HCV), Malaria, and *Treponema pallidum*, the bacterium that causes Syphilis. According to the Global Health Sector Strategy (GHSS) on viral hepatitis, which was adopted in 2016, the disease must be eradicated by 2030 by lowering associated mortality by 65 % percent and new cases by 90% [5]. In Pakistan, almost 1.5 million units of blood are donated each year [6]. The incidence of blood infections like hemophilia and thalassemia, as well as the requirement for hemodialysis, pregnancies, operations, and accident and emergency situations, contribute to the increased need for blood [6]. In the Eastern Mediterranean Region (EMR), Pakistan and Egypt together represent 80% of viral hepatitis cases. By a 5% frequency (about 8 million people), the second-highest rate of HCV infection in the world is seen in Pakistan [7]. In terms of HBV, 2.5% of people have the virus [8]. Every year in Pakistan, there are 150 000 new cases of HBV and 250 000 new cases of HCV [9, 10]. In individuals with multi transfused thalassemia major, HCV is a common TTI, and HIV threat is expanding [11]. Blood donors in Hyderabad have been shown to have a high prevalence of HCV infection (3.52%). [12] About 7.4% of the general population is affected by blood-borne transmissions, which continue to be a critical vector for the spread of HBV and HCV infections [13]. Pakistan has one of the highest rates of maternal mortality in the world (276/100,000 live births), with anemia and bleeding problems being the main causes of maternal fatalities [14]. Due to a lack of cooperation between hospitals and other donation providers, TTIs have grown to be a significant issue in Pakistan, endangering the health of both donors and recipients. To ascertain the rate of HBV, HCV, and HIV among blood donors, several investigations were carried out in both developed and developing nations [15]. In underdeveloped nations, the healthy people blood and individual with no symptoms can spread a wide variety of blood borne illnesses [16]. In Pakistan's Khyber Pakhtunkhwa (KPK) province, the prevalence of HCV varies from 4.1 to 36% in different areas [17]. Although many members of the general public are infected with HBV and HCV, the majority of them do not exhibit any symptoms [18]. Sharing of instruments, such as needles, blades, and surgical instruments, is one of the primary ways that HCV propagates in Pakistan [19]. In Pakistan, mother-to-child transmission is common with several sexual contacts, blood transfusions, and intravenous drug usage [20]. The study was aimed to evaluate the frequency of blood borne diseases among blood donors in district Swat.

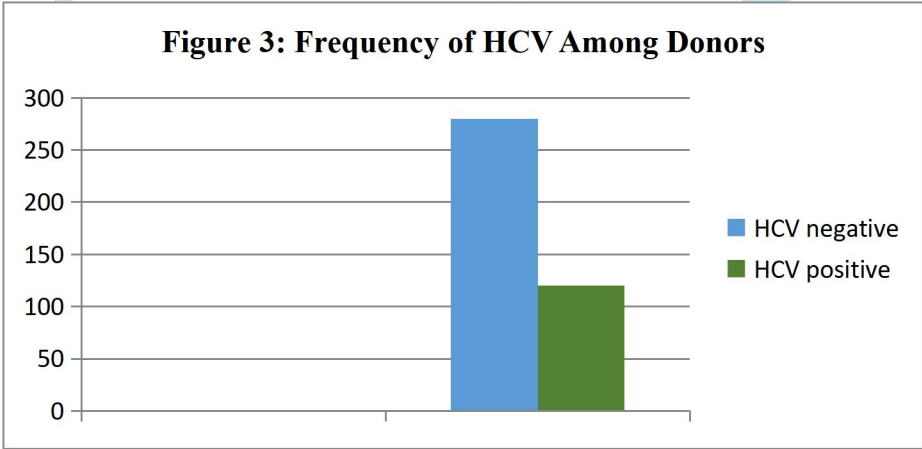
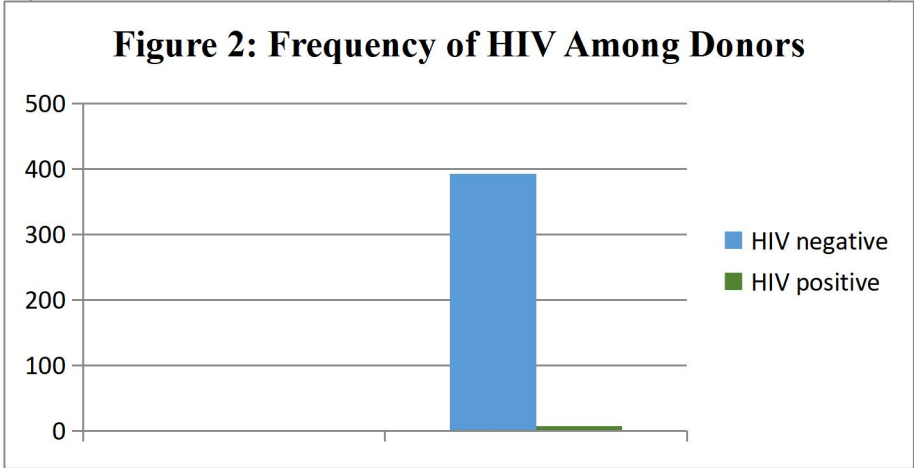
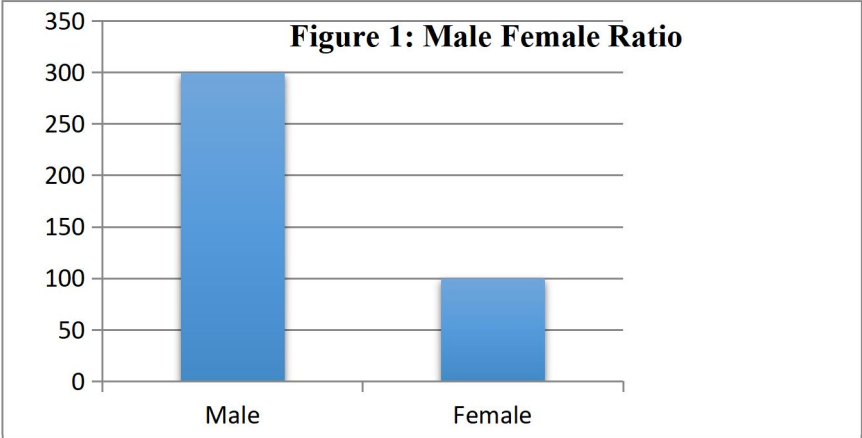
## Materials and Methods

This cross-sectional study was conducted by the department of microbiology, Government Degree College Madyan Swat. The study duration was six months from August 2023 to January 2024. The frequency of Syphilis, Malaria, HIV, HBV, and HCV in samples of blood donors was determined by using immunochromatographic technique. A total of 400 individuals were tested for Malaria, Syphilis, HBV, and HCV. All blood donors underwent a physical assessment. A clinical and medical history was then obtained in order to rule out patients who had a history of HIV, hepatitis B or C, or any other serious illness. Moreover, Anemia patient (hemoglobin < 12.5 g/dl for females and < 13.5 g/dl for males) and thalassemia patients were not included. Patients eligible to donate blood were those whose normal body weight was greater than 50 kg. Former patients with malaria were able to donate after three months of their malarial therapy, in accordance with the institution's policy. There was no gender bias in the inclusion of any donors between the ages of 20 and 60 years. All the data was entered and analyzed by using excel sheet.

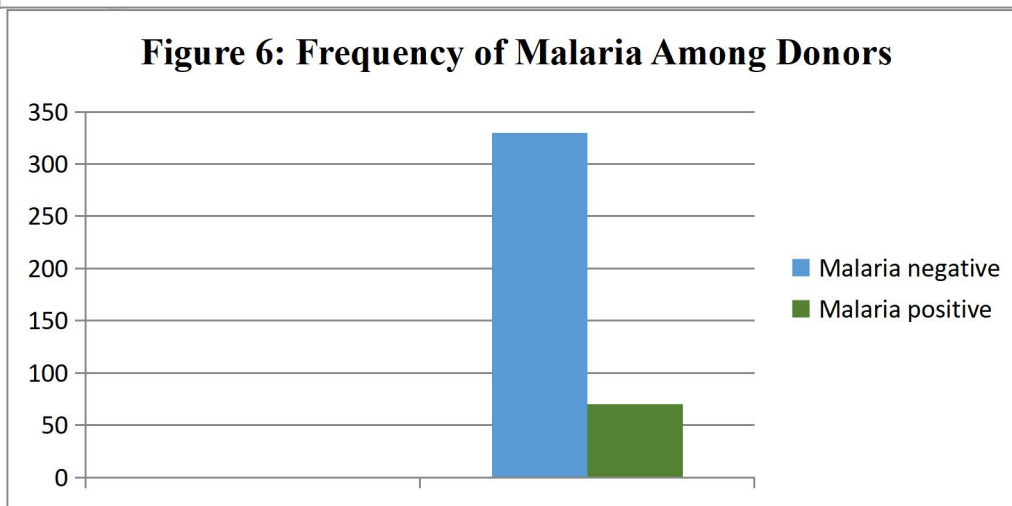
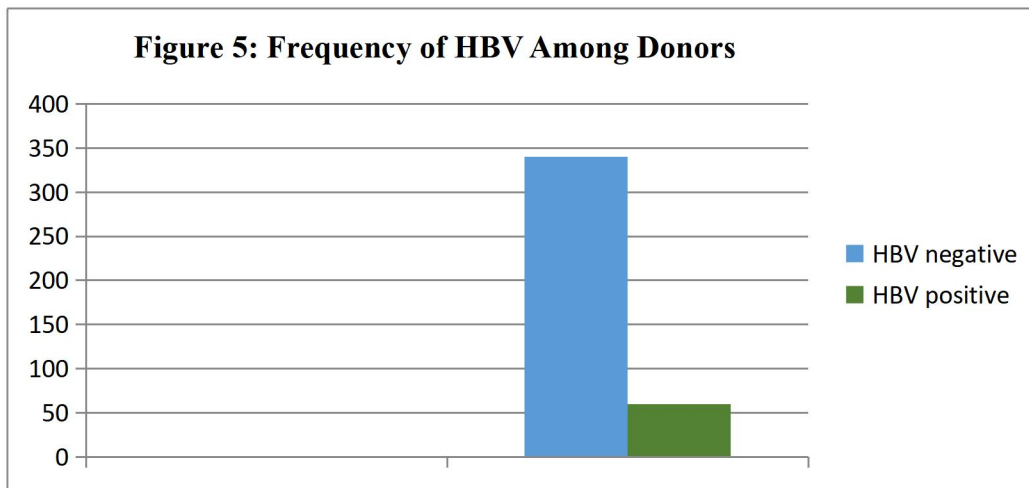
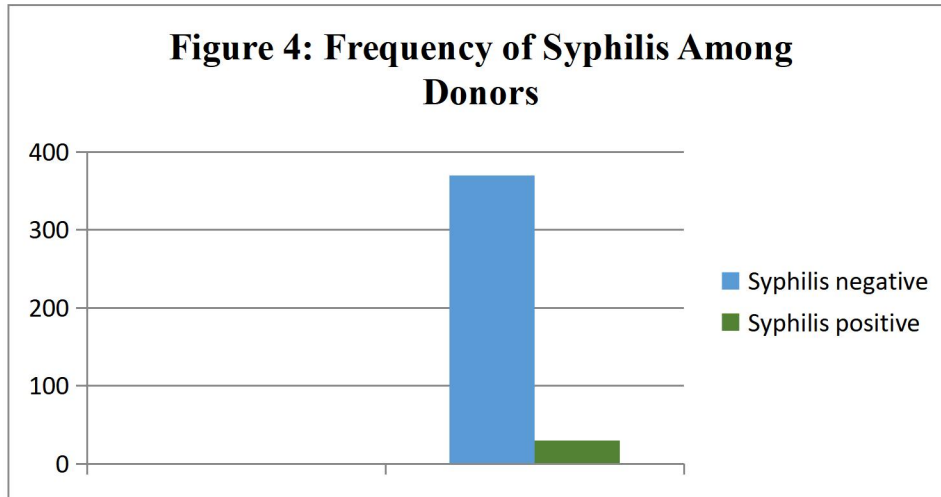
## Results

This study includes 400 participants based on the inclusion criteria, where 100 (25%) were female and 300 (75%) were male. The age ranged was from 20 to 60 years. Over all the donors tested positive for HBV were 60 (15%), those who were positive for HCV were 120 (30%). Furthermore donors positive for HIV were 7 (1.75%). In addition to that donors positive for malaria were 70 (17.5%). And donors positive for syphilis were 30 (7.5%). Nearly the most affected age group was > 26 and < 50 years.

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## Discussion

Millions of lives have been saved via transfusion. Infection from bacteria and viruses found in blood and products is one of the most significant threats related to transfusion. The purpose of this study was to ascertain the probability of blood borne diseases in Swat. Male constituted 75% of the blood donors in this study. This finding was consistent with a number of studies conducted in the underdeveloped world, where male donors percentages are higher than that of female donors [21,22,23,24,25]. Pregnancy, breastfeeding, and menstruation are some of the physiological variables that are the reasons responsible for the lower percentages of female who donate blood [21]. Among our subjects, HCV was the most prominent TTI (120; 30%), followed by Malaria (70;17.5%). Memon et al. observed similar findings [26]. Our results showed an HIV prevalence of 1.75%, which is comparable to the 0.24% in a study done by Siddiqui et al. [27] and the 0.26% reported by Chandekar et al. [28]. Our study's 1.75 percent HIV and 7.5% syphilis prevalence are similar to a former Iranian result of 0.01% co-infection prevalence in the general population [29]. In comparison, Western China reported HIV/HCV and HIV/syphilis co-infection rates are 5.7% and 18.9%, respectively [30]. Because hepatitis B immunizations are accessible in Pakistan, hepatitis B cases seem to be fewer than hepatitis C infections. TTI'S illnesses are more likely to be transferred by relative substitution donors than by volunteer donors, infection risks are higher in Pakistan, where there is a relatively new culture of charitable giving, a significant reliance on substitute, and no regular screening [31-36]. The prevalence of HBV in our research was 15%. Many studies, including Mohsenizadeh et al. [37] 0.19%, Abebe et al. [38] 3.06%, Jary et al. [39] 14.78%, Ahmed et al. [35] 1.5%, Ahmad et al. [36] 1.4%, Farooq et al. 2.13% [33], Jiskani et al. [34] 1.38%, and Tigabu et al.[40] 4.1% proved diverse and equivalent prevalence of HBV in their respective contexts. Both developing and industrialized nations are concerned about HCV. Our current analysis confirms previous reports of high frequency of anti-HCV and active HCV infection from different regions of [41, 42]. The potential rise in our study may result from a decline in knowledge, safety precautions, and instruction on blood-borne illnesses. However, our findings indicate a lower frequency of HIV and Syphilis and a higher prevalence of HCV, HBV, and Malaria. To identify the actual incidence of these pathological markers, however, more extensive study of the frequency and prevalence of the general population are required. Adhering to fundamental biosafety norms and raising public awareness are potential ways to prevent such infections in healthy populations. Moreover, basic health care clinics should be developed by government with necessary facilities, quality instruments and qualified people in all distant locations.

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## Conclusion

The current study's findings regarding the prevalence of TTIs (Transfusion Transmitted Infections) among blood donors indicate that there is still significant threat to blood safety in Pakistan. Majority of donors were male (75%). The most common TTI infection was HCV (30%), followed by Malaria (17.5%) and HBV (15%). HIV (1.75%) and Syphilis (7.5%) was less prevalent.

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