



Gap Analysis of Screening for Hepatitis risk factors among Blood Donors

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ABSTRACT

Title-Gap Analysis of Screening for Hepatitis Risk Factors among Blood Donors

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Abstract-

Background:

Hepatitis infection continues to be a significant cause of transfusion-transmitted diseases (TTDs) worldwide. Risk factors such as high-risk behavior, family history of hepatitis, history of jaundice, and tattooing have been identified in previous studies through post-notification counseling of reactive donors. However, these risk factors are frequently undisclosed during pre-donation screening. This study aimed to assess the gaps in the pre-donation screening process by evaluating why such risk factors remain unreported, with a focus on post-notification counseling of donors who tested reactive for hepatitis.

Methods:

A prospective analysis was conducted on blood donors who tested reactive for hepatitis B or C between January and August 2024. Post-notification counseling sessions were provided to inform donors of their reactive status and offer referrals for further medical management. Donor demographic information, including educational level and employment status, was collected. Additionally, donors' awareness of Hepatitis and their reasons for nondisclosure of critical risk factors during pre-donation screening were evaluated following informed consent.

Results:

197 donors were identified as reactive during the study period, with 58.8% reactive for Hepatitis B and 22.8% for Hepatitis C, resulting in prevalence rates of 1.07% and 0.41%, respectively. Among the reactive donors for Hepatitis who responded on notification, 18.9 % were uneducated, and 48.1% had only completed primary education. High-risk behaviors were reported by 28.3% of the donors, while 53.7% demonstrated limited or no awareness of hepatitis or its transmission routes. The predominant reason for nondisclosure of risk factors was a lack of understanding of its importance in 73% of donors.

Conclusion:

This study underscores significant deficiencies in the pre-donation screening process for Hepatitis infection, largely attributable to donor unawareness regarding hepatitis infection. Despite stringent screening protocols, critical risk factors remain unidentified. Enhancing donor education programs, especially for those with lower educational levels, and creating more private and supportive screening environments are crucial to improving risk disclosure and reducing hepatitis transmission through blood donation.

INTRODUCTION

Hepatitis infections, particularly hepatitis B and C, are leading causes of transfusion-transmitted diseases (TTDs) worldwide, posing a significant threat to blood safety. In India, the prevalence of Hepatitis B surface antigen (HBsAg) ranges from 1% to 4%, and Hepatitis C virus (HCV) antibodies are found in approximately 0.3% to 1% of blood donors. Despite advancements in blood screening and donor selection processes, the risk of transmission continues to be a challenge.

Risk factors for hepatitis transmission, such as high-risk behaviors (intravenous drug use, unprotected sex), family history of hepatitis, previous episodes of jaundice, and body modifications like tattoos, are well-established. These factors are routinely assessed during pre-donation screening. However, many donors fail to disclose such risk factors, undermining the effectiveness of the screening process. Studies indicate that these risk factors often appear only during post-notification counseling, suggesting discrepancies between what donors report in initial screenings and what is later revealed.

The presence of Hepatitis B and C infections in blood donors threatens blood safety and burdens blood centers. Discarding reactive blood components reduces the available supply, making it harder to meet transfusion needs. The study thus aims to explore the reasons behind the non-disclosure of high-risk factors during pre-donation screening, focusing on post-notification counseling for donors who tested reactive for Hepatitis infection. By identifying the barriers to accurate disclosure, the study seeks to help blood centers refine screening practices and improve the safety of the blood supply.

MATERIALS AND METHODS

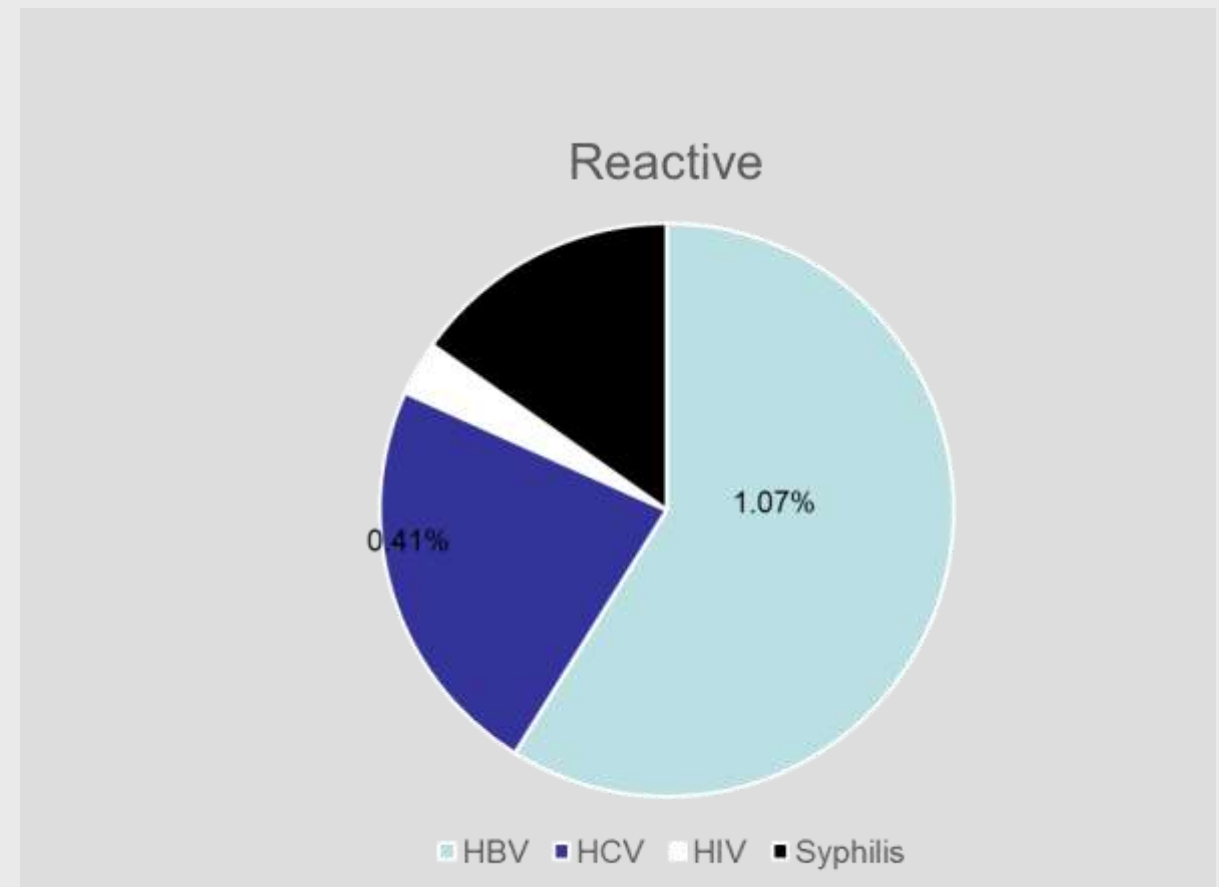
A prospective observational study was conducted in the Department of Transfusion Medicine at a tertiary care hospital in Central India from January to August 2024 to evaluate blood donors who tested reactive for Hepatitis B (HBsAg) or Hepatitis C antibodies (anti-HCV) by ELISA. Eligible blood donors were those who had consented to testing for transfusion-transmissible infections (TTIs) and who agreed to be notified if test results were reactive. Reactive donors were identified from blood bank records and contacted via a standardized notification protocol. Trained counselor attempted to reach donors by telephone, making up to three calls at intervals of 10 days. Donors who could not be reached after three attempts were classified as non-responders and excluded from further follow-up. Responsive donors were invited to attend a counseling session. Ethical approval for the study was obtained from the institutional review board, ensuring adherence to guidelines and the confidentiality of donor information. Informed consent was obtained from all participants before data collection.

Counseling sessions were conducted individually by trained healthcare professionals. During counseling, donors were informed of their reactive status and the implications of the infection, and referrals were provided for medical follow-up. The session also aimed to educate donors about hepatitis transmission, prevention strategies, and risks associated with blood donation. Demographic details, including age, gender, educational background, and employment status, were recorded. Donors were asked about potential risk factors contributing to the infection. A self-structured questionnaire was also administered to explore reasons for non-disclosure of Hepatitis risk factors during the pre-donation screening process. The responses were categorized into themes: lack of awareness, fear of deferral or rejection, privacy concerns, or misunderstanding of screening questions..

RESULTS

- During the study period, 197 blood donors were identified as Reactive for transfusion-transmissible diseases (TTDs). Among these, 58.8% (n=116) were reactive for Hepatitis B (HBV), and 22.8% (n=45) were reactive for Hepatitis C (HCV), with prevalence rates of 1.07% and 0.41%, respectively, among the total donor population screened. Of these reactive donors, 79 (40.1%) responded to notification calls and participated in counseling sessions.
- Of the 79 responding donors, 53.2%(n=42) were from rural areas, while 46.8% (n=37) resided in urban areas. Educational levels varied significantly: 18.9% were uneducated, and 48.1% had completed only primary education
- Risk factors of unprotected sexual activity, multi-partner sex, positive family history, tattoos & history of jaundice were reported by 28.3% of the responding donors (n=22). The majority (53.7%, n=42) demonstrated limited or no awareness of hepatitis transmission routes or preventive measures.
- The most common reason cited for nondisclosure of risk factors during the pre-donation screening was a lack of understanding of the importance of these factors, reported by 73% (n=58) of the respondents.
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RESULTS



Educational Level	Number of Donors (n)	Employment Status	Number of Donors (n)
Uneducated	15 (18.9%)	Students	11(13.9%)
Primary Education	38 (48.1%)	Unskilled	53(67.0%)
Secondary Education	17 (34.6%)	Skilled	15 (18.9%)
Higher Education	9 (11.3%)	-	-
Total	79	Total	79

Reason	Number of Donors (n)	Percentage (%)
Lack of Understanding of Importance	58	73.0
Fear of Deferral or Rejection	11	13.7
Privacy Concerns	5	6.8
Misunderstanding Screening Questions	5	6.2

DISCUSSION

- ❑The study provides important insights into the prevalence of transfusion-transmissible diseases (TTDs), specifically Hepatitis B (HBV) and Hepatitis C (HCV), among blood donors in central India. The prevalence rates found in our study(1.07% for HBV and 0.41% for HCV) are similar to those reported in studies across India. These findings highlight the continued public health concern of TTDs in blood donors.
- ❑A significant issue revealed in our study is the low response rate of 40.1% to notifications and counseling for reactive donors. This finding aligns with other studies, where challenges like lack of contact details and geographic barriers hinder effective follow-up.
- ❑The study also found that 18.9% of responding blood donors were uneducated, and 48.1% had only primary school education—this lack of education points to a widespread lack of understanding about Hepatitis infection and its transmission. As noted in various research studies, lower literacy levels among donors make it challenging to provide effective health education and for donors to self-report risk factors. Additionally, 53.7% of responders were unaware of how Hepatitis is transmitted, underscoring the need for public awareness campaigns to educate donors and recipients.
- ❑Another key finding in our study is the underreporting of risk factors. About 28.3% of respondents admitted to risk factors of unprotected sexual activity, multi-partner sex, positive family history of hepatitis, tattoos & history of jaundice, but many of these factors were not disclosed during pre-donation screening. Our study found that 73% of those who did not disclose these risk factors did not understand the importance of sharing this information. In addition, the pressure to donate blood for family members led donors to hide potential risk factors due to fear of being deferred. This was particularly seen in emergency or replacement donations, which endanger blood safety.
- ❑To address these issues, donor education and pre-donation counseling must be improved. Awareness campaigns focusing on rural areas and low-literacy populations are crucial for narrowing the knowledge gap. Screening tools should be made easier to understand, and counseling should build trust, encouraging donors to be honest about their risk factors. Additionally, providing confidential counseling for replacement donors could help reduce fears of deferral and encourage full disclosure. These steps are essential to reducing the prevalence of TTDs and ensuring safer blood transfusions. Future research should assess the effectiveness of these interventions in different demographic settings to ensure lasting improvements in blood safety.
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CONCLUSIONS

The study highlights critical gaps in the pre-donation screening process for Hepatitis infection, primarily stemming from donor unawareness of the risks associated with Viral Hepatitis. Important risk factors remain unidentified despite rigorous screening protocols, leading to potential virus transmission. Enhancing donor education programs, particularly for those with lower levels of education, is essential to address this. Furthermore, creating more private and supportive screening environments will encourage risk disclosure and help reduce hepatitis transmission through blood donations.

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