



Viral Hepatitis B and C in Blood Donors the Case of the Reference Health Centre in Commune II of the District of Bamako (Mali)

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DOI: 10.36347/gamj.2023.v04i02.004

| Received: 05.05.2023 | Accepted: 11.06.2023 | Published: 16.06.2023

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Abstract

Original Research Article

Introduction: HBV and HCV infections are among the most worrying in Africa. They remain real public health problems. Screening blood donations for these infectious agents helps to prevent their transmission during transfusion of whole blood or blood derivatives. The aim was to determine the seroprevalence of infectious markers of hepatitis B and C in blood donors at the Bamako commune II reference health centre laboratory. **Materials and Methods:** This was a retrospective, descriptive study of all donations made from 01 January to 31 December 2022, by subjects who had given informed consent and met the criteria in force in the country. **Results:** In our study the age range 26 to 35 years was the majority 41.9% with extremes of 18 to 60 years. The majority of blood donors were male (91.5% with a sex ratio of 10.8) and the vast majority were family donors (66.7%). 17.6% of blood donors were infected with hepatitis B (HBV) and 5.2% with hepatitis C (HCV). **Conclusion:** The prevalence of HBV and HCV remains high among blood donors in Commune II of Bamako. Transmission of these infectious agents during a blood transfusion remains a cause for concern. It is therefore vital to ensure the loyalty of blood donors through rigorous medical selection in order to improve transfusion safety.

Keywords: Laboratory, HBV, HCV, Commune II, Bamako.

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INTRODUCTION

Hepatitis is a liver disease caused by acute or chronic inflammation of the liver cells, most often by viruses or other pathogens. Several types of virus are involved in this liver disease, including viruses A, B, C, D, E and G. The three (3) most frequently encountered types of virus are A, B and C. New data from the World Health Organisation (WHO) reveal that an estimated

325 million people worldwide are living with chronic hepatitis B virus (HBV) or hepatitis C virus (HCV) infection (WHO; 2017). It is clearly recognised that blood transfusion is one of the ways in which the B and C viruses are transmitted and contaminated (Laperche S *et al.*, 2011). HBV and HCV infections are among the most worrying in Africa. They remain real public health problems (Lombi MN *et al.*, 2016). Screening for these different infectious agents during blood donations helps

to prevent their transmission during a transfusion of whole blood or its derivatives. In Mali, hepatitis B has been the subject of numerous studies (Ballo. P. L *et al.*, 2017) but not specifically at the commune II reference health centre in Bamako. The main objective of our work was to determine the seroprevalence of infectious markers of hepatitis B and C in blood donors at the laboratory of the commune II reference health centre in Bamako.

MATERIALS AND METHODS

The study took place at the Centre de santé de référence (CSRéf) in Commune II of the Bamako district, specifically in the biomedical laboratory department. The biomedical laboratory service receives all requests for blood from patients in need of transfusion who are hospitalised at the CSRéf. To this end, it receives all donors (family and voluntary) for the constitution of a blood bank at the CSRéf. This was a retrospective and descriptive study of all donations made between 01 January and 31 December 2022, by subjects who had given their informed consent and met the criteria in force in the country: age between 18 and 60, body weight over 55 kg, good physical and mental health on clinical examination. Subjects with chronic medical conditions, women who were breast-feeding or menstruating, subjects who had been vaccinated in the

three weeks prior to donation and subjects who were at risk of sexually transmitted diseases were excluded from donation. HBV and HCV were tested using immunochromatographic rapid diagnostic tests (RDT), which are reliable and effective. (TDR par immunochromatographie en zones tropicales 2018) for screening. For HBV, the test was for HBsAg, whereas for HCV it was for antibodies. The initial results were confirmed at the national blood transfusion centre (CNTS). The results were stored in the blood donor register at the CSRéf laboratory, and all positive cases were referred to the appropriate healthcare facilities for confirmation and possible management. The variables studied were socio-demographic characteristics (age, sex, occupation, marital status, Rhesus group), blood donation (type of donor) and serology (Hepatitis B and C serologies). Data were collected using standardised collection forms, entered and analysed using SPSS 20.0 software.

RESULTS

In our study we registered 982 donors. The age range of 26 to 35 years was the majority 41.9% with extremes of 18 to 60 years. The majority of donors were male (91.5%) with a sex ratio of 10.8. Males accounted for 92.2%. Blood group O(+) was the most represented at 42.8% (Table 1).

Table 1: Breakdown of blood donors by socio-demographic characteristics

Socio-demographic characteristics	Workforce	Frequency
Age		
18-25 years old	209	21,3
26-35 years old	411	41,9
36-45 years old	252	25,7
46-55 years old	86	8,7
56-60 years old	24	2,4
Total	982	100
Sex		
Male	899	91,5
Female	83	8,5
Total	982	100
Residence		
Urban	905	92,2
Rural	77	7,8
Total	982	100

The majority of donations were family donations (66.3%) and voluntary donations (33.7%) Figure 1.

The seroprevalence of hepatitis B among blood donors was 17.6%. By age, the 26 to 35 age group was the most affected (20.9%), while the 56 to 60 age group

was the least affected (4.2%). Hepatitis B was much more prevalent among donors living in urban areas (83.23%). HCV seroprevalence was 5.2% among blood donors, the age group most affected was 26 to 35 years, i.e. 43.13%, males accounted for the majority, 92.15%, and urban donors were the most affected, 74.50 % (Figure 2).

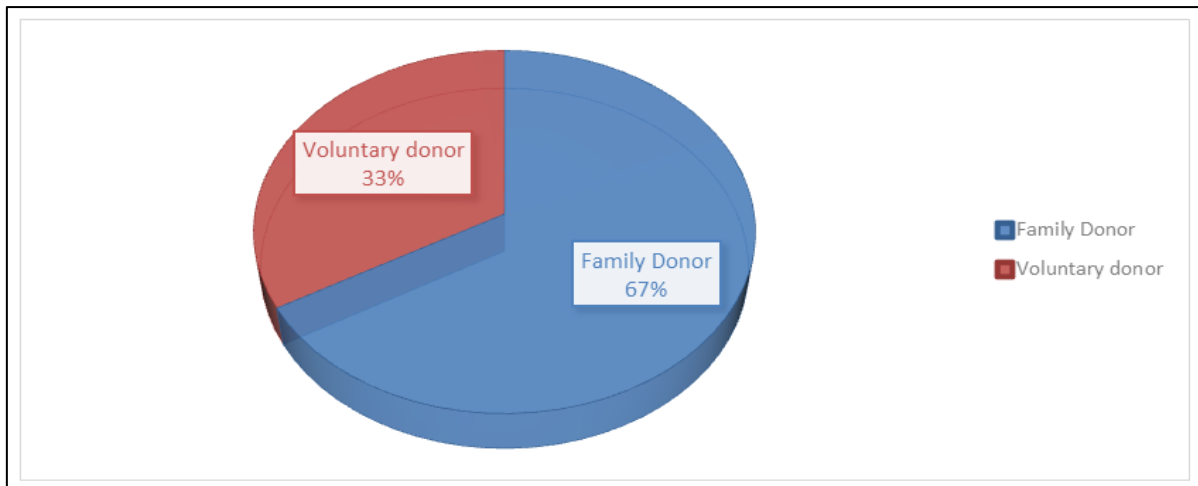


Figure 1: Breakdown by type of blood donation

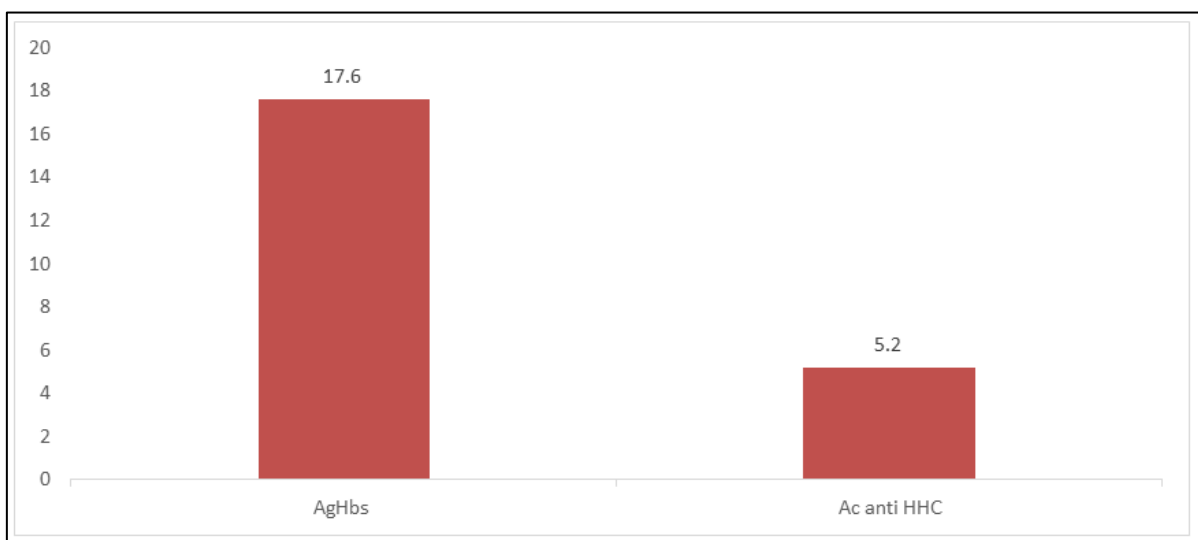


Figure 2: Breakdown by positivity of serological tests

DISCUSSION

In our series, the study population consisted mainly of young adults with a predominance of the 26 to 35 age group (41.9%) and extremes of 18 to 60 years. Our result is almost identical to the majority of authors (KABINDA JM *et al.*, 2014) in Congo, (H. KABEMBA BUKASA *et al.*, 2017) in DRC and (Habibou Sarr *et al.*, 2021) in Senegal. This situation could be explained by the fact that the Malian population is made up largely of young people (EDSM VI, 2018, P 11). Males accounted for a majority of 91.5%, with a sex ratio of 10.8. Our result is similar to but higher than that of DEYAN S *et al.*, 2013 (97.5%), H. KABEMBA BUKASA *et al.*, 2017 (57.2%) and KRA O *et al.*, 2007 (85%). This situation could be explained by the fact that women are limited by certain physiological activities such as pregnancy, childbirth, breastfeeding and menstrual cycles, which are factors that limit blood donations (RAKOTONIAINA AI *et al.*, 2013). In our study, family donations accounted for a majority of 66.7%. Our result is similar to that of (H. KABEMBA BUKASA *et al.*, 2017), i.e. 89.5%. This situation could be explained by the lack of community ownership of

voluntary donation. We found a seroprevalence of hepatitis B of 17.6% among blood donors in our study. Our result is higher than that of a study carried out at the national blood transfusion centre (CNTS) in 2019 (Diarra AB *et al.*, 2019), which found 10.72%, and those of Habibou Sarr *et al.*, 2021, in Senegal, and Mayaki Z *et al.*, 2013, in Niger (10.5% and 15.4% respectively). However, it is lower than that of a study in Burkina Faso in 2018 (Ouédraogo HG and al 2019), which found 20.4%. Our result is in line with the trend in the prevalence of hepatitis B, which is generally high in sub-Saharan Africa (Dabsu R *et al.*, 2018). The seroprevalence of hepatitis C in our study was 5.2%. It was lower than that of blood donors in Burkina Faso (Nagalo BM *et al.*, 2012), which was 8.69%, but higher than that of (Noubiap J *et al.*, 2013) in Cameroon, 3.2%, and that of the CNTS in 2019, 1.53% (Diarra AB *et al.*, 2019).

CONCLUSION

The prevalence of HBV and HCV remains high among blood donors in Commune II of Bamako. The transmission of these infectious agents during a

blood transfusion remains a cause for concern, especially if the biological qualification of bags is not carried out correctly. It is therefore vital to ensure the loyalty of blood donors through rigorous medical selection in order to improve transfusion safety.

Conflict of interest: The authors declare that there is no conflict of interest.

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