



Original Research Article

Sero-Prevalence of HIV and Syphilis Infections among Blood Donors at Kosti Teaching Hospital-White Nile State-Sudan

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ABSTRACT

Keywords

HIV,
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This study is conducted to evaluate the sero-prevalence of HIV and syphilis among blood donors at Kosti Teaching Hospital, White Nile State, Sudan. During the study period from January to May 2014 at Kosti Teaching Hospital, a total number of 1204 donors (all were males) were involved in our study. The sero-prevalence for antibodies against HIV and *Treponema pallidum* was positive in 8(0.7%) and 82 (6.8) donors, respectively. With significantly higher prevalence of HIV in the age group of 20–40 years (6%). It is obvious from the result of this study that the prevalence of sero-positive HIV and *Treponema pallidum*, is higher among blood donors. Therefore, strict selection of blood donors and comprehensive screening of donors' blood for HIV and syphilis using standard methods are highly recommended to ensure the safety of blood for recipient.

Introduction

Over the past three decades, procedures used to evaluate donors have changed dramatically. The increased awareness of potential spread of infectious disease by

blood transfusion has resulted in much more elaborate donor screening for the purpose of protecting the transfusion recipient (Kleinman, 1996). At the same time,

experience from autologous donation programs has lessened the concern about adverse donor reactions (Goldfinger *et al.*, 1993). Transfusion-transmissible infectious diseases carry long term consequences for the recipients, families and the communities since the infected person represents a pool for the infection and can transmit the disease during its a symptomatic period (WHO, 2002). Moreover these infections burden the individuals and the community through the increase in the requirement in medical care for the infected persons and loss of man power resources (Kitchen and Barbara, 2001). In Sudan the demand for blood transfusion services is high due to the endemicity of infections like malaria, nutritional problem and obstetrical emergencies associated with blood loss (Adam *et al.*, 2004).

Syphilis is a systemic disease caused by *Treponema pallidum* (T.P) which can be spread by sexual contact, blood transfusion and via vertical transmission (Murray *et al.*, 2002). In sub-Saharan Africa, syphilis remains a serious public health problem.

Syphilis has also acquired a new potential for morbidity and mortality through association with increased risk for HIV infection (Olokoba *et al.*, 2008).

Materials and Methods

This was a retrospective analysis of consecutive blood donors' records covering the period between January 2014 and April 2014 at Kosti Teaching Hospital which is a tertiary care hospital. Kosti city is located in the White Nile State, central Sudan, 300 km from the capital city, Khartoum; with a population of 459,991 people. Blood donors were either volunteer or relatives or friends of recipients. The first step in the blood bank for the potential donors is taking past medical history and to do physical

examination by a trained doctor.

Individuals are required to answer panel of questions on socio-demographic data (age, education, residence, etc.), previous illness, and chronic disease, history of blood transfusion and history of jaundice. Those who are apparently healthy, their age range between 18 and 65 year and their weights above 45 kg are qualified for donation. Five ml of blood were drawn from each subject, sera were separated, and tested for HIV, syphilis and hepatitis B surface antigen (HbsAg) and IgG antibodies for hepatitis C virus, using rapid Dip-strip (manufactured in the UK by fortress diagnostic LTD). The data were analyzed by SPSS. P value <0.05 was considered statistically significant. Ethical approval for this study was provided by the director of hospital.

Results and Discussion

At the conclusion of the study, a total of one thousand two hundred and four voluntary blood donors were found to have been screened for syphilis and HIV. All of them were male.

The age of the donors ranged from 20 to 55 years old. Majority of the donors were in the age group 20–40years i.e. third decade of life.

Eighty two donors (6.8%) were positive for syphilis. Seventy eight donors (6.47%) are in the age groups 20–40 years and four donors (0.33%) are in the age group 41–55 years old (Table 1 and 4).

Eight donors (0.7%) were HIV positive from the total donors, 7 donors of them were in the age group 20–40years old and one donor was in the age group of 41–55years old (Tables 2 and 3). No donor found to be positive for both HIV and syphilis (Table 5).

Table.1 Syphilis frequency

	frequency	Percentage
T.P +ve	82	6.8%
T.P -ve	1122	93.2%
Total	1204	100%

Table.2 HIV frequency

	frequency	Percentage
HIV +ve	8	0.7%
HIV -ve	1196	99.3%
Total	1204	100%

Table.3 HIV & Age correlation

	HIV+ve	HIV-ve	Total
Age 20–40years old	7(0.6%)	1121(99.4%)	1128(100%)
Age 41–55years old (% within the age)	1(0.1%)	75(99.9%)	76(100%)
Total (% within the age)	8(0.7%)	1196(99.3%)	1204(100%)

Table.3 T.P & Age correlation

	T.P +ve	T.P -ve	Total
Age 20–40years old	78(6.47%)	1050(93.53%)	1128(100%)
Age 41–55years old	4(3.3%)	72(94.7%)	76(100%)
Total	82(6.8%)	1122(93.2%)	1204(100%)

Table.4 HIV & T.P correlation

	T.P +ve	T.P -ve	Total
HIV+ve	0(0.0%)	8(0.7%)	8
HIV-ve	82(6.9%)	1114(93.1%)	1196
Total	82(6.9%)	1122(93.8%)	1204(100%)

The present study was aimed at determining the seroprevalence of syphilis and HIV among voluntary blood donors. The literature also notes that syphilis can occur in blood donors (Chikwem *et al.*, 1997).

However there is scanty information on the occurrence of syphilis among blood donors in Sudan with which to compare but there is some information about HIV prevalence among blood donors.

From this study, the age range of blood donors was 20 to 55 years. This is similar to that in the study of Khan *et al.* (2002) in Peshawar, Pakistan who found that their blood donors were in the age range of 18 to 60 years. It is also near to the findings of Muktar *et al.* (2005) in Zaria, North-western, Nigeria in which their donors' age ranged from 19 to 42 years. However the donors in Jos, Northcentral, Nigeria were in the age range 21 to 50 years according to Egah *et al.* (2004), in Ethiopia study done by Belay Tessema *et al.* (2010) the median age of the study subjects was 25 years (range 17–65 years). In western Sudan in Kassala study done by Tajeldin M. Abdallah and Abdel Aziem A. Ali (2010) showed similar age group between 19 and 58 years old.

In our study we found those with positive test for syphilis were 6.8% which is near to the 7.5% found by Adjei *et al.* (2003) in Ghanaian donors; and is lower than the 12.7% found by Matee *et al.* (1999) among Tanzanian donors; and the 15.0% found by Elfaki *et al.* (2008) among Sudanese donors. In our study the prevalence is higher than the 1.2% found by Abdalla *et al.* (2005) in their study among Kenyan donors, 1.1% found by Fiekumo *et al.* (2009) in Osogbo, South-western Nigeria, 0.85% found by Gupta *et al.* (2004) in Indian donors; the 0.75% found by Bhatti *et al.* (2007) among Pakistani donors; and the 0.1% found by

Ejele *et al.* (2005) in Port Harcourt, South-south, Nigeria. In western Sudan the prevalence was 2.7% in Kassala town in Tajeldin M. Abdallah and Abdel Aziem A. Ali (2010) study. These variations in these results could be due to the difference in sample size or the methods of test used by blood banks to screen for syphilis.

The overall prevalence of HIV in this study (0.7%) is lower than study done by Tajeldin M. Abdallah and Abdel Aziem A. Ali (2010) in Kassala which showed 3%, and near to 0.154% in Ethiopia in study done by Tressema *et al.* (2010), and similar to 0.3% in tertiary hospitals in India by Sangita V Patel *et al.* (2013). In Elobeid in central Sudan the prevalence of HIV was 0.8% by AbdelSalam Mohamed Hamad Elfaki *et al.* (2008). So the results of anti-HIV were low in our study if compared with studies from Tanzania, Zimbabwe and Democratic Republic of Congo (Matee *et al.*, 1999; McFarland *et al.*, 1997; Batina *et al.*, 2007). Zimbabwe has one of the highest HIV prevalence rates in the world (Mahomva *et al.*, 2006). The extensive population movements from inside the country or across the borders, the rapid urbanization and social and cultural changes, all affect the family ties and community behavior resulting in a marked increase in the prevalence of sexually transmitted diseases including HIV and syphilis. Measures should be taken to reduce this since syphilis promotes the transmission of HIV and both infections can simulate and interact with each other (Goh, 2005).

The laboratory tests which are used in our blood bank for screening of donated blood (rapid tests) are lagging behind modern technology which is capable of detecting the infective agents even during the window period, and this feature is not available when the rapid tests are used to screen donors.

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