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Sero-Prevalence and Risk Factors Associated with HIV Infection in Pregnant Women

Abstract

Background: The epidemic of AIDS cause by HIV infection has remained a major public health problem. More than 90 % of children living with HIV have been infected through mother-to-child transmission.

Aim: The aim was to study sero-prevalence and risk factors associated with HIV among pregnant women.

Methods: A descriptive cross sectional hospital based study was conducted in Omdurman Maternity Hospital, Sudan. All pregnant females attending antenatal care (ANC) clinic, referred clinic or private section were recurred in the study.

Results: A 58% of women were at 21-30 year old, 57% were graduated from the university, 98.75% were married and 71.5% were housewife. All women were tested for HIV antibodies 1.75% were HIV positive. The majority of women have only one sexual partner (husbands). More than 50% never had HIV screening test before, do not have history of blood transfusion, and were not IV drug abusers. Dental procedures, tattoos and cautery marks were the lowest detected risk factors. Most of females have history of surgical operation at least once and few are delivered at home under supervision of untrained midwife. Many females have no obstetric complication, and were not suffering from chronic diseases or sexual transmitted diseases. Television and multimedia have effective role for awareness of HIV, but most participants look to the infected female as social stigmatized, entirely avoiding or may accept her reluctantly.

Conclusion: The prevalence of HIV among pregnant women is low in Sudan, many females have no obstetric complication, chronic diseases or sexual transmitted diseases. Television and multimedia have effective role for awareness of HIV.

Keywords: Sero-prevalence; HIV; Risk factors; Pregnant women; Sudan

Research Article

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Abbreviations: HIDS: Acquired Immuno Deficiency Syndrome; MTCT: Mother-To-Child Transmission; FGM: Female Genital Mutilation; VCT: Voluntary Counseling and Testing

Introduction

Human immunodeficiency virus (HIV) was the fourth leading cause of death worldwide, 33 million people were estimated to be affected for life, approximately two third of them are African [1]. Sudan is bordered by countries with high rates of HIV infection, and the first AIDS case was reported in 1986 [2]. A behavioral and epidemiological survey (BES) was conducted by Sudan National AIDS Program in 2002 [3]. The prevalence among general population was 1.6% [4]. However, recent estimate of HIV/AIDS prevalence in Sudan after South Sudan separation was 0.4% [5]. This estimate makes Sudan the lowest countries with HIV/AIDS prevalence in Sub-Saharan Africa. The spread of HIV is influenced by poverty and illiteracy, both of which are widespread in Sudan. The movement of people displaced by harsh environmental conditions has increased the number of HIV/AIDS cases [2]. The spread of the human immunodeficiency virus (HIV) are major public health challenges with adverse social and economic implications. About 90 % of children living with HIV have been infected through mother-to-child transmission (MTCT) [6,7].

Most HIV infections in Sub-Saharan Africa can be prevented by interventions, such as HIV testing, enrollment in treatment from 14 weeks of gestation (second trimester) [8,9], management of labor (Caesarean section), informed decisions on breastfeeding and pediatric care [10,11]. Previous survey conducted in 2007 for 9164 pregnant women attending antenatal care services in15 Sudanese states found that HIV prevalence was 0.2% [12]. The objective of the present study was to determine the HIV prevalence and the associated risk factors among pregnant women attending antenatal care clinics in Omdurman Maternity hospital between March and May 2016. In addition, to determine the importance of HIV testing as routine antenatal test in pregnant females and how it may affect the pregnancy outcome, and to assess level of awareness and social stigma about HIV.

Materials and Methods

Study population

This is descriptive cross sectional hospital based study, conducted at Omdurman Maternity Hospital, Omdurman, Khartoum state, Sudan. Four hundred pregnant females attending

ANC clinic, referred clinic or private section between 15th of March to 15th of May were participated. A verbal consent was taken including explanation about the study objectives to satisfy participant's confidentiality. However, many females are refused to participate, due to cultural inhibition and social stigmatization on HIV. Information was collected using structured questionnaire including socio-demographic characteristics of study population such as (age, educational level, economical status, occupation, residence, parity and marital status). Risk factors and sexual behavior, complications of HIV, level of awareness, and social stigma of infected HIV female.

HIV screening

About 3 ml of venous blood or finger prick was drawn from each female (according to the phlebotomist). The samples were tested using rapid screening test for HIV1/2. All positive results were reexamined using colloidal screening test (Sensitivity 99.4%, Specificity 100%, Accuracy 99%) [13] And Uni-Gold screening test (Sensitivity 100%, Specificity 100%) [14] To obtain full confirmation.

Ethical approval

The study was approved by the department of Medical Microbiology, Faculty of Medical Laboratory Sciences, and University of Khartoum. Ethical was obtained from counseling and voluntary office for HIV testing, and Omdurman Maternity Hospital. Participating in the study was voluntary and involved individuals were allowed to exit whenever they decide.

Data analysis

Data was presented as percentage; significant of results was tested using Chi square test, *P* value less than 0.05 was considered significant. Analysis was performed by SPSS version 22.0.

Results

Socio-demographic characteristics of study population

The socio-demographic data shows that 58% of women participated in the study were at 21-30 year old, 57% were graduated from the university and 71.5% were housewife. Most participants 64.75% are lives in Omdurman city, and their economic status was more than 2000 SDG. Approximately 98.75% of women are married; the duration of marriage for 34.5% is less than 5 years. The gravidity of 53.75% was 2 to 4 times (Table 1).

Sero-prevalence of HIV among pregnant women

All women presented to maternity clinics were tested for HIV antibodies following informed consent, counseling and completion of a questionnaire. Sero-prevalence studies for 400 women showed that 98.25% of women are HIV negative and 1.75% of women are HIV positive (Figure 1).

Risk factors, sexual behavior and complications of HIV among pregnant women

The majority of women have only one sexual partner (husbands). More than half of participant never had HIV screening test before and most of them does not know an HIV infected person. Very few females have multiple sexual partners and using condom. Most of females do not have history of blood transfusion, and were not IV drug abusers. The majority of the women undergone FGM (female genital mutilation) either pharaoh or Sunnh. Dental procedures, tattoos and cautery marks were lower detected risk factors. Most of females have history of surgical operation at least one time, few of them deliver at home under supervision of untrained midwife. The majority of pregnant women have never experience trauma (Table 2). Many women have no obstetric complication, and are not suffering from any chronic diseases or sexual transmitted diseases (Table 3).

Table 1: Socio-demographic characteristics of the pregnant women.

Variable	N (%)
Age	
15-20	29 (7.25%)
21-30	232 (58%)
31-40	121 (30.25%)
41-50	18 (4.5%)
Educational Level	
Illiterate	9(2.25%)
Primary	64(16%)
Secondary	83(20.75%)
Graduate	228(57%)
Postgraduate	16(4%)
Occupation	
Housewife	286(71.5%)
Student	28(7%)
Worker	5(1.25%)
Employee	74(18.5%)
Free worker	7(1.75%)
Economic Status	
Less than 500 SDG	58(14.5%)
500 -1000 SDG	115(28.75%)
1000 - 2000 SDG	92(23%)
More than 2000 S.P	135(33.75%)
Residence	
Khartoum	48(12%)
Omdurman	259(64.75%)
Bahri	56(14%)

Rural	37(9.25%)
Marital Status	
Married	395(98.75%)
Divorced	2(0.5%)
Widow	2(0.5%)
Other	1(0.25%)
Duration of Marriage	
Less than year	76(19%)
Less than 5 year	138(34.5%)
Less than 10 year	115(28.75%)
More than 10 year	71(17.75%)
Gravidity	
Primary	100(25%)
2-4 times	215(53.75%)
4-6 times	62(15.5%)
More than 6 times	23(5.75%)
Parity*	
Zero	25(6.25%)
1	99(24.75%)
2	86(21.5%)
3 and more	90(22.5%)

Notes: *Parity zero: Have no child; 1: Have one live child; 2: Have two; 3: Have three or more children

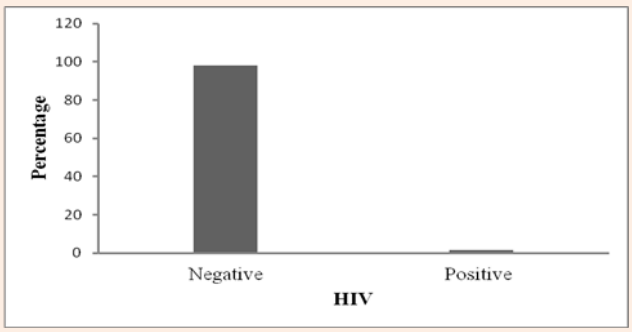

Figure 1: Sero-prevalence of HIV among pregnant women.

Awareness and social stigma among pregnant women

There was some misconception about transmission of HIV orally, while the majority knows the transmission modes. Television and multimedia have effective role in HIV awareness, most women look to the infected female as social stigmatized, entirely avoiding or may accept her reluctantly (Table 4).

Table 2: Risk factors and sexual behavior among pregnant women.

Variable	Negative Cases	Positive Cases	*P* value
Number of Marriages			0.043
Once	375(95.4%)	5(71.4%)	
Twice	18(4.6%)	2(28.5%)	
Husband's Partners			0.001
No	341(86.8%)	1(14.2%)	
One partner	46(11.7%)	5(72.4%)	
More than one	6(1.5%)	1(14.2%)	
Previous Test of HIV			0.001
Yes	141(35.9%)	7(100%)	
No	252(64.1%)	0	
Know Infected Person			0.000
Yes	15(3.8%)	4(57.1%)	
No	278(96.2%)	3(42.8%)	
Multiple Sexual Partners			0.883
Yes	7(1.8%)	1(14.2%)	
No	386(98.2%)	6(85.7%)	
Condom Using			0.008
Yes	24(6.1%)	2(28.5%)	
No	369(93.9%)	5(71.4%)	
Blood Transfusion			0.000
Yes, once	23(5.9%)	0	
More than one	6(1.5%)	2(28.5%)	
Multiple times	3(0.8%)	0	
No	361(91.9%)	5(71.4%)	
IV Drug Abuse			0.025
Yes	13(3.3%)	0	
No	380(96.7%)	7(100%)	
Circumcision			0.661
Pharaoh	166(42.2%)	4(57.1%)	
Sunnh	145(36.9%)	2(28.5%)	
Simplified Sunnh	48(12.2%)	0	
No	34(8.7%)	1(14.2%)	
Dental Procedures			0.553
Yes	191(48.6%)	3(42.8%)	
No	202(51.4%)	4(57.1%)	
Tattoo and Cautery Marks			0.569
Yes	23(5.9%)	0	
No	370(94.1%)	7(100%)	

Surgical Operation			0.686
Once	119(30.3%)	3(42.8%)	
More than once	101(25.7%)	2(28.5%)	
No	173(44%)	2(28.5%)	
Home Deliveries			0.03
Once	26(6.6%)	2(28.5%)	
More than once	17(4.3%)	1(14.2%)	
No	350(89.1%)	4(57.1%)	
History of Trauma			0.773
Yes, one time	22 (5.6%)	0	
Yes, more than one time	5 (1.3%)	0	
No	366 (93.1%)	7 (100%)	

Table 3: Complications of HIV among pregnant women.

Variables	Negative Cases	Positive Cases	*P* value
Number of Miscarriages			0.05
None	276 (70.2%)	5 (71.4%)	
Once	81 (20.6%)	0	
Twice	22 (5.6%)	2 (28.5%)	
3 and more	14 (3.6%)	0	
Obstetric Complications			0.28
Once	40(10.2%)	2(28.5%)	
More than one time	6(1.5%)	0	
No	347(88.3%)	5(71.4%)	
STDs*			0.000
Once	55(14%)	1(14.2%)	
More than one time	22(5.6%)	3(42.8%)	
No	316(80.4%)	3(42.8%)	
Chronic Disease			0.896
One disease	44(11.2%)	1(14.2%)	
More than one disease	9(2.3%)	0	
No disease	340(86.5%)	6(85.7%)	

Notes: STDs: Sexual Transmitted Diseases

Discussion

The epidemic of AIDS cause by HIV infection has remained a major public health problem. Socio-demographic data was collected to determine the distribution of HIV risk factors in the population, sexual questions was involved in details because all pregnant women had experienced sexual intercourse which is one of the most important modes of transmissions of HIV. In a conservative Sudanese community, was socially unacceptable to ask relatively sexually related questions without a clear indication. Therefore, the majority of participants were rejected the study consent. An access to antenatal HIV test during pregnancy for Prevention of Mother-to-Child Transmission (PMTCT) in Sudan was limited [15]. Previous study found that women with low income and low socioeconomic status are more likely to access antenatal care [16].

Table 4: Level of awareness, mode of transmission and social stigma among pregnant women.

Variables	Negative Cases	Positive Cases	*P* value
False Transmission Modes			0.773
Yes	47 (12.0%)	1 (14.2%)	
No	317 (80.7%)	6 (85.7%)	
I don't know	29 (7.4%)	0	
True Transmission Modes			0.703
Yes	357 (90.8%)	7 (100%)	
No	31 (4.6%)	0	
I don't know	18 (4.6%)	0	
Source of Information			0.879
Television and multimedia	229 (58.3%)	5 (71.4%)	
Family	10 (2.5%)	0	
Friends	36 (9.2%)	0	
Study	118 (30%)	2 (28.5%)	
Social opinion to Infected Female			0.042
Social stigma	60 (15.3%)	0	
Entirely avoiding	115 (29.3%)	0	
Reluctantly accept	93 (23.7%)	1 (14.2%)	
Never mind to be a friend	52 (13.2%)	2 (28.5%)	
Try to help her and be a friend	73 (18.6%)	4 (57.4%)	

Notes:

False transmission modes: are by sharing food, shaking hands and adhere to infected person

True transmission modes: are by sexual contact, kisses and sharing of needles that infected by blood

The prevalence of HIV infection in antenatal mothers was 1.7% in the present study, while previous studies shows the prevalence was 0.2% in the Middle East and North Africa region [17], 0.70% in Belgaum p [18] and 3.0% in Nigeria [19]. In sub-Saharan Africa the prevalence declined by 18% more in pregnant women than non-pregnant women [20]. Evidence from sub-Saharan countries reveals that offering routine HIV testing on an opt-out basis not only improved its uptake, but also improved coverage of antiretroviral prophylaxis and post-natal follow-up attendance [21,22].

HIV seropositivity significantly associated with behavioral variables [19]. Survey among all negative and positive cases was done to assess the degree of exposure to the most serious mode of transmissions or the unsafe medical practices, it revealed that most female have husband who have either one or multiple

sexual partners. The culture of using condoms was not common in Sudan even among positive cases 98.5% are non-users. Therefore, more health education sessions were needed to raise the level of awareness about safe sexual practice and possible modes of transmission. Blood transfusion is a serious risk factor only 8.2% of the participants had either a history of once, or multiple previous blood transfusions. The IV drug abuse was low in the study, while in the developed countries was one of the most serious mode of HIV transmission. In the present study only 8.7% of females had never undergone any form of circumcision such as pharhoic Sunnh or simplified Sunnh. Home deliveries under supervision of untrained midwife are common in Sudan even among urban areas. Both circumcision and home deliveries are unsafe medical practices which are done in poor hygienic environments with limited resources, low quality standards and sometimes applied by non-trained women. Kagimu et al. [23] indicated that HIV prevalence was higher among free thinkers compared with Muslims and Christian. This high prevalence observed in free thinkers could be attributed to the fact that their tradition allowed them to be polygamous in nature [19].

A general misconception was found when discussed the modes of HIV transmission. Some women believe that HIV may be transmitted by eating, drinking or even shaking hands with infected person. While other had no idea about HIV transmission, and few women knew about the Mother to child transmission of HIV [15]. Babiker et al. [11] indicated that 70.4% of Sudanese women aged 15-49 years have heard about AIDS (Acquired Immunodeficiency Syndrome) but only 4% were aware of the major methods for preventing HIV transmission. Consistent with the previous studies people with AIDS are seen as ignominious [2] within all the participants a general social discrimination and stigmatization about HIV infected persons was remarkable, the highest percentage confirmed their avoidance to HIV infected people. The majority of women were not willing to disclose their HIV status to anyone. The main perceived consequences of disclosure are stigma and the resultant expectation of job loss and being forced to leave the family [15]. Study in Eastern Sudan indicated that ignorance of the effect and knowledge of HIV, stigmatization and inadequate motivation represented the main factors influencing the acceptance of VCT (voluntary counseling and testing) HIV [24]. Stigma interferes with attempts to fight the HIV and AIDS epidemic [24].

Conclusion

The study concludes that new strategies for prevention and control of HIV infection were highly needed. Discovering HIV infection in early trimester of pregnancy can greatly decrease vertical transmission. The level of awareness about the risk factors and modes of HIV transmission was good. Standards methods for blood banking and transfusion will be establish and strictly applied to avoid iatrogenic transmission. Therefore, routine ANC HIV screening was extremely recommended in Sudan for better mother and child health, and to decreased mortality and morbidity rate.

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Conflict of Interest

There is no conflict of interest.

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