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RESEARCH ARTICLE

PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV: ACCEPTANCE TO HIV TESTING AT SAINT CAMILLE HOSPITAL, OUAGADOUGOU

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ABSTRACT

Background: Mother-to-child transmission of HIV is a public health problem in Burkina Faso. The main objective of this study is to analyze screening test acceptance among pregnant women during their antenatal visit, the first phase of vertical prevention. **Methods:** The study recruited pregnant women under 32 weeks of amenorrhea who came for their antenatal visit. **Results:** Of 12467 pregnant women, only 3215 (25.79%) agreed to undergo HIV testing and counselling (HTC). This represents a refusal rate of 74.21% (9252/12467). In this study, we note that there is a significant change in the number of pregnant women consenting to HIV testing during the period under consideration: the acceptance rate has increased from 18.69% in 2009 to 35.46% in 2019 ($p < 0.0001$). We also note that the participation rate was the same at both the pre-test and post-test levels. Women who came to the antenatal consultation for their first, second and third pregnancies represented 35.21%, 24.14% and 17.33% of the 3215 women respectively. And 23.33% of women were at least in their fourth pregnancy. About 12.26% of the women included in the study were HIV positive (394/3215). Among HIV-positive women, 12.69% were women who came to antenatal consultation for their first pregnancy, 25.63% for their second, 28.17% for their third, and 33.50% for those who had four or more pregnancies. **Conclusion:** This study shows that acceptance of HIV testing and counselling among pregnant women remains low. The highest acceptance rate was among women with their first pregnancy. Therefore, an awareness campaign on HTC would help to improve the participation rate of pregnant women in this program in order to enable efficient case detection and, at the same time, effective prevention of mother-to-child transmission of HIV.

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INTRODUCTION

The most recent UNAIDS data show that every week, about 6,200 young women aged 15 to 24 become infected with HIV (UNAIDS, 2019). In sub-Saharan Africa, young women aged 15 to 24 are twice as likely to be living with HIV as men (OMS, 2019). The global coverage rate of antiretroviral treatment (ART) for pregnant and lactating women living with HIV is 80% (ONUSIDA, 2018).

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Like other African countries, Burkina Faso initiated its first multisectoral national strategy to combat HIV/AIDS and sexually transmitted infections (STIs) from 2001 to 2005; and this strategy included a national program of the prevention of mother-to-child transmission (PMTCT) of HIV (CNLS-IST, 2009; OMS, 2004). Since then, other strategies have followed one another to improve the care of people living with HIV (PLHIV). As recommended by WHO, Burkina Faso has also initiated lifelong ART for all PLHIV, including pregnant and lactating women, regardless of the clinical stage of the disease, or CD4 T lymphocytes count (OMS, 2016, 2019; ONUSIDA, 2018; UNAIDS, 2019). Highly active antiretroviral therapy (HAART) has significantly reduced HIV MTCT rates (Linguissi et al., 2012; Sagna et al., 2008; Soubeiga et al.,

2014) despite the emergence of resistant strains, (Sagna *et al.*, 2015), and the lost to follow-up in children born to HIV-infected mothers (Larsen *et al.*, 2019). Testing allows people with HIV to be treated as soon as the diagnosis is known, so that the progression of the disease can be stopped according to UNAIDS target 90-90-90 (ONUSIDA, 2018). Early initiation of treatment is a factor that positively influences compliance with child follow-up appointments (Ngandu *et al.*, 2019). However, the acceptance of mothers to the treatment of children remains a challenge to be able to maintain it until 18 months after delivery (Larsen *et al.*, 2019). Increasing access to ART is essential to reduce HIV MTCT (Goga *et al.*, 2019). Studies have also shown the importance of involving male partners in HIV testing and counselling (Audet *et al.*, 2016; Reta *et al.*, 2019). The main objective of this study was to analyze HIV test acceptance among pregnant women during antenatal consultations.

MATERIALS AND METHODS

Study population: The study targeted the period 2009 to 2013 and 2019; and involved pregnant women who came for prenatal consultation at Saint Camille Hospital of Ouagadougou (HOSCO). Based on the opt-out approach, after the proposal for pre-test counselling, consenting pregnant women were offered free HIV testing. The results were given to them during the post-test counselling.

Sampling and sample treatment: Venous blood (6 mL) was collected onsite, at ANC service of Saint Camille Hospital, on EDTA tube. Plasma was collected after centrifugation at 40,000 g for 10 minutes. 1.5 mL aliquots were stored for banking at -80°C at the Pietro Annigoni Biomolecular Research Centre (CERBA) in Ouagadougou. HIV serological tests were performed with Determine® (Abbott Laboratories, Tokyo, Japan) and SD Bioline (Standard Diagnostics, Inc., Korea). When two (2) tests are discordant in an individual, a third confirmatory test was immediately recommended according to the algorithm used in Burkina Faso with other kits such as Immuno Comb®II HIV-1&2 Bispot (Orgenics, Yavne, Israel).

Statistical Analyses: Clinical and demographic data were entered and analyzed using EpiInfo Version 6.04 software. The significance threshold was set at $p < 0.050$.

Ethical aspects: The internal ethics committee of St Camille Hospital and CERBA approved this study and the future mothers gave their consent for the blood samples to be taken.

RESULTS

During this study, for the period 2009 to 2013, 12467 pregnant women came for prenatal consultation at HOSCO. Of these women, 3215 women (25.79%) agreed to undergo HTC. All these women also agreed to answer our questionnaire. The pregnant women in the study were between 18 and 46 years of age, with an average age of 26.7 ± 5.6 years. Among them, 1751 were housewives (54.5%), 858 women in the informal sector (26.7%), 244 employees (7.6%), 218 students (6.8%) and 144 students (4.5%). Women housewives and those in the informal sector alone accounted for 81.15% of the study population.

With regard to the screening test, 394 pregnant women (12.26%) were tested positive for HIV out of 2821 (87.74%) negative. For the targeted period of 2019, 5786 women were seen in antenatal consultations. Of these, 35% agreed to HTC.

The rate of HTC acceptance increased from 25.79% in previous years to 35.46% in the targeted period of 2019 ($p < 0.0001$) (Table I). Women who came to ANC for the first, second and third pregnancy represented 35.21% (1132/3215), 24.14% (776/3215) and 17.33% (557/3215) respectively. About 23.33% (750/3215) of women were at least in their fourth pregnancy. And 12.26% of the women included in the study were found to be HIV positive (394/3215). Among HIV-positive women, 12.69% (50/394) were women who came to ANC for their first pregnancy, 25.63% (101/394) for their second pregnancy, 28.17% (111/394) for their third pregnancy, and 33.50% (132/394) for those who had four or more pregnancies. Most HIV-positive pregnant women were on their fourth or later pregnancy (33.50% versus 12.69%: $p < 0.0001$). However, among pregnant women with HIV negative test result, many were in their first pregnancy (38.36% versus 21.91%: $p < 0.0001$). The number of living children was higher among HIV-negative women than among HIV-positive women ($p < 0.05$). The survey results are shown in Table II.

DISCUSSION

We conducted a study on pregnant women in antenatal consultation at Saint Camille Hospital in Ouagadougou. In this study, we note that there is an increase in the rate of acceptance of pregnant women to HTC over the period studied: from 22% in 2010-2011 to 30% in 2012-2013 ($p < 0.0001$). In the targeted period of 2019, this rate was about 35%. From 2002 to 2004 this rate was about 18% (Pignatelli *et al.*, 2006). HIV testing and prevention campaigns could be at the origin of this evolution. We also note that participation was the same at both the pre-test and post-test levels. Also, all women who attended the pre-test counselling waited to get their results back during the post-test counselling. As in the study by Ayiga *et al.*, (2013), which found, among other things, that higher levels of education and work in the informal sector are among the significant predictors of increased test acceptance. Indeed, in this study, more than three quarters of the women (81.15%) who accepted the test were housewives or in the informal sector. This result could also be attributed to the quality of the pre-test advice (Omonaiye *et al.*, 2019; Schechter *et al.*, 2014; Vernooij and Hardon, 2013). Women who came to ANC for the first, second and third pregnancy represented 35.21%, 24.14% and 17.33% of the 3215 women respectively. And 23.33% of women were at least in their fourth pregnancy. This suggests that the highest attendance would be during the first pregnancy. This could be explained by the fact that less experienced women would be better able to go to the clinic. From 2009 to 2013, about 12.26% of the women included in the study were HIV positive (394/3215). Among HIV-positive women, 12.69% were women who came to ANC for their first pregnancy, 25.63% for their second pregnancy, 28.17% for their third pregnancy, and 33.50% for those who had four or more pregnancies. Unlike the results found by the Ngwej team in 2015 (Ngwej *et al.*, 2015), our results show that the risk of infection increases with parity. This could be explained by the fact that the period of exposure to HIV risk situations would be longer for multiparous women than for primigravid women. Women who test positive are managed by PMTCT services to limit the rate of vertical transmission (OMS, 2016, 2019).

Table 1. Result of HIV testing and counselling

Year	2009 (01 October - 31 December)	2010-2011 ¹	2012-2013 ²	Total (2009-2013) ³	2019*
ANC attendance	824	5863	5780	12467	5786
HTC acceptance	154/824 (18.69%)	1318/5863 (22.48%)	1743/5780 (30.16%)	3215/12467 (25.79%)	2052/5786 (35.46%)
HIV+ (394)	33/154 (21.43%)	163/1318 (12.37%)	198/1743 (11.36%)	394/3215 (12.26%)	07/2052 (0.34%)
HIV- (2821)	121/154 (78.57%)	1155/1318 (87.63%)	1545/1743 (88.64%)	2821/3215 (87.74%)	2045/2052 (99.66%)

HIV - (HIV negative): $p(1 \rightarrow 2): p > 0.05$; $p(3 \rightarrow *): p < 0.001$

HTC Acceptance: $p(1 \rightarrow 2): p < 0.001$; $p(3 \rightarrow *): p < 0.001$

Table 2. Results of the survey about the number of pregnancies

Characteristics		HIV negatives (/2821)	HIV positives (/394)	P value
No of pregnancy	1 st pregnancy	1082 (38.36%)	50 (12.69%) ¹	0.0002
	2 nd pregnancy	675 (23.93%)	101 (25.63%)	0.7030
	3 rd pregnancy	446 (15.81%)	111 (28.17%)	0.0034
	4 th pregnancy and more	618 (21.91%)	132 (33.50%) ²	0.0049
No. of alive children	1 child alive	667 (23.64%)	133 (33.76%)	0.0141
	2 children alive	448 (15.88%)	86 (21.83%)	0.1565
	3 children alive	235 (8.33%)	39 (9.90%)	0.9591
	4 or more children alive	138 (4.89%)	30 (7.63%)	0.9236
No. of deceased children	1 deceased child	340 (12.05%)	100 (25.38%)	0.0014
	2 deceased children	75 (2.66%)	43 (10.91%)	0.1145
	3 or more deceased children	39 (1.38%)	14 (3.55%)	
No. of abortions	1 abortion	280 (9.93%)	46 (11.68%)	0.9342
	2 abortions	62 (2.20%)	8 (2.03%)	
	3 or more abortions	33 (1.17%)	3 (0.76%)	

$p(1 \rightarrow 2) < 0.0001$

There is therefore a chain - namely prenatal consultation, screening and management of possible cases - aiming the prevention of mother-to-child transmission of HIV; a chain that should provide the effective involvement of the male partner (Ghoma Linguissi *et al.*, 2019; Hersey *et al.*, 2019; Malaju and Alene, 2012). Studies in Burkina Faso recommended that women should initiate discussions on screening with their partners (De Allegri *et al.*, 2015; Hardon *et al.*, 2013).

The drop-out rate among those who discussed HIV testing with their partners was low in Burkina Faso (Obermeyer *et al.*, 2013; Ramirez-Ferrero and Lusti-Narasimhan, 2012). Given also that the highest attendance at ANC and HIV testing would be during the first pregnancy, it is then necessary to focus on awareness so that the partner is present to test not only at the first ANC but at each ANC, this could be a source of mutual motivation within the couple and a strong contribution to reducing MTCT/HIV.

Conclusion

This study shows that the highest acceptance of HTC was during the first pregnancy. The factors affecting acceptance of HTC among pregnant women should be further explored in order to enable efficient case detection and thus effective prevention of mother-to-child transmission of HIV.

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Key point: This study shows that the focus should be on VCT awareness campaigns to improve the participation rate of pregnant women in the program to prevent mother-to-child transmission of HIV.

Glossary of Abbreviations

ANC: Antenatal care
 ART: Antiretroviral treatment
 CERBA: Pietro Annigoni Biomolecular Research Centre in Ouagadougou
 HAART: Highly active antiretroviral therapy
 HIV: Human Immunodeficiency Virus
 HOSCO: Saint Camille Hospital of Ouagadougou
 HTC: HIV Testing and counseling
 MTCT: Mother to child transmission
 PLHIV: People living with HIV
 PMTCT: Prevention of mother-to-child transmission
 STIs: Sexually transmitted infections

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