

15 Factors predicting uptake of voluntary counselling and testing in a real-life setting in a mother-to-child center in Ouagadougou, Burkina Faso

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Summary

OBJECTIVE To identify factors predicting uptake of voluntary HIV counselling and testing in pregnant women.

METHODS All pregnant women receiving ante-natal group health education at St Camille Medical Center, Ouagadougou, Burkina Faso from 1 May 2002 to 30 April 2004 were offered voluntary HIV counselling and testing. If they consented, the women were pre-test counselled, tested by two rapid tests giving immediate results and post-test counselled.

RESULTS Less than one-fifth of pregnant women [1216/6639 (18.3%, CI 17.4–19.3%)] accepted voluntary HIV counselling and testing, mainly at the first ante-natal visit (83.4%) and at early gestational age (73.4% before week 24). The HIV seroprevalence rate was 10.6% (8.8–12.5%). The uptake rate was independently associated with age, the number of previous pregnancies and the number of previous miscarriages.

CONCLUSIONS Our two-step approach of group education followed by voluntary HIV counselling and testing yielded a low uptake rate in this setting. However, the drop-out rate after enrolling in the programme was nearly zero. The timing of programme uptake would permit implementation of earlier prophylactic courses. Effective scaling-up of voluntary HIV counselling and testing outside the clinical trial requires a mass sensibilization campaign pointing out the programme's benefits and addressing the stigma of HIV. The independent value of age and previous obstetrical episodes show how important social factors are in influencing the voluntary HIV counselling and testing uptake rate.

keywords HIV, voluntary counselling and testing, predictive factors

Introduction

In Burkina Faso, the HIV epidemic, is mainly fuelled by HIV-1 and seroprevalence in the general population, has been estimated to be around 2% (MED/BF 2004), higher in urban areas (3.7%), with a surprising decreasing trend. Mother-to-child transmission of HIV (MTCT) is a main transmission pathway of HIV in the country, and contributes to >5000 new child infections per year (UNDP 2001). In 2003, a seroprevalence survey mainly in urban areas among pregnant women by the National AIDS Council found a 4% prevalence (MoH/BF 2003).

Recent clinical trials have demonstrated the efficacy of short-term course of anti-retrovirals in reducing the rate of MTCT of HIV (Guay *et al.* 1999; Shaffer *et al.* 1999), supporting their widespread use according to WHO (2001) and UNICEF (2002) guidelines. However, when Voluntary Counselling and Testing (VCT) has been proposed in real life situations outside clinical trials, the uptake rate of the VCT resulted in figures generally <50%, indicating a limited public health impact of such interventions (UNICEF 2003).

In 2002, a national programme to prevent mother-to-child transmission of HIV was launched in Burkina Faso by the Ministry of Health following WHO and UNICEF

S. Pignatelli *et al.* **Uptake rate of VCT: predictive factors**

guidelines. The programme comprises (i) individual and confidential VCT at any ante-natal visit, (ii) single dose nevirapine prophylaxis [zidovudine (AZT) should specific circumstances occur], (iii) informed choice between exclusive breastfeeding or early weaning at 4 months and formula feeding (freely available) and (iv) offer of VCT for the partner (MoH/BF 2000). The national PMTCT programme was first implemented in May 2002 at St Camille Medical Center (SCMC), a large mother-to-child health facility in Ouagadougou, where >7000 deliveries take place every year (CMSC 2004). Since 2003, highly active antiretroviral therapy (HAART) has been available there to pregnant women fulfilling the WHO entry criteria for treatment (WHO 2002, 2003) (PMTCT-plus). Our aim was to assess the VCT uptake rate at the SCMC and to identify factors facilitating or preventing access to the programme after 2 years of operation.

Materials and methods

Population

Pregnant women attending the mother-and-child outpatient department of SCMC to receive ante-natal consultations come predominantly from the poor and densely populated eastern part of urban Ouagadougou. The large majority are illiterate housewives with a stable family situation. All women attending the MCH department in the period 1 May 2002–30 April 2004 were offered VCT.

Voluntary counselling and testing

Voluntary Counselling and Testing (VCT) is organized as a two-step process. First, information about HIV transmission and prevention is provided collectively during the group health education session offered every day to all pregnant women. Individual VCT is then offered free of charge and all consenting women receive individual and confidential additional information on HIV/AIDS and on the PMTCT programme. Both group and individual sessions are conducted by midwives with specific training in VCT and address the main topic of HIV infections, especially mother-to-child transmission, PMTCT, benefits of VCT with opportunities for questions and answers. A ante-natal visit including counselling and testing costs 23.500 CFA (5.3 euros), but free of charge to pregnant women.

Serological tests

After informed consent, serological screening is performed by the sequential use of two rapid tests, Determine® and

3Genie-II®, as previously described (Koblavi-Deme *et al.* 42001), detecting both HIV-1 and HIV-2 infections. This procedure allows immediate post-test counselling, thus limiting loss to follow-up. Should discordant results occur between the two rapid tests, an ELISA is also performed. Seropositive women are advised to disclose their status to the partner, to whom testing is also offered.

Data collection and storage

Demographics and obstetrical data of pregnant women are routinely and confidentially registered and stored in electronic format (Epi-Info vers. 6.04d). Gestational age at first ante-natal visit is estimated by assessing uterine height

Prevention of mother-to-child transmission

HIV1-seropositive pregnant women are offered antiretroviral prophylaxis by single dose nevirapine (200 mg) when labour starts. Single dose nevirapine (2 mg/kg) is also administered to the newborn within 72 h from birth. In case of HIV2 infection, or if nevirapine was used previously by the mother, short-course AZT is initiated starting from week 36 (Guay *et al.* 1999; Shaffer *et al.* 1999; WHO 2001). Since 2003, HIV-infected pregnant women and their partners fulfilling WHO entry criteria for resource-poor countries are offered triple antiretroviral therapy (PTMTC-plus; WHO 2002, 2004) to be continued even after HIV screening programme in the child has been terminated.

Statistical analysis

The relation between the variables was evaluated by linear regression. The variables found to be significant ($P \leq 0.2$) in univariate analysis, were entered into multivariate models in order to identify factors predictive of acceptance of VCT offer. Analyses were performed with STATA (StataCorp 2000. Stata Statistical Software: release 7.0, College Station, TX, USA).

Results

In the 24-month period from 1 May 2002 to 30 April 2004 at total of 6639 pregnant women received ante-natal care and group health education at the SCMC. Of those, 1216/6639 (18.3%; CI: 17.4–19.3%) accepted pre-test counselling and 1215 were tested for HIV. The remaining 5424 pregnant women declined VCT. The test was declared to be the first HIV test of their life by 1013/1215 (83.4%) of the tested women. A total of 825 of 1215 (67.9%) pregnant women had VCT at the first ante-natal

S. Pignatelli *et al.* Uptake rate of VCT: predictive factors

consultation. Gestational age was <12 weeks in 315/1215 (25.9%), between 12 and 24 weeks in 601/1215 (49.5%) and >24 weeks in the remainder 299/1215 (24.6%).

Almost all tested women (1210/1215) reported to the post-counselling session that took place in the same morning in 1190/1210 (98.3%) of the cases.

Serological screening tested positive for HIV in 215/1215 (17.7%; CI: 15.6–20.0%) pregnant women. Of those, 210 were HIV1+, three were HIV2+ and two were both HIV1 and HIV2+. Discordant results with rapid tests (Determine® positive and Genie-II® negative) occurred only in two cases and an ELISA was then performed. Of the 215 seropositive pregnant women, 97 (45%; CI: 38.3–52.0%) were already aware of their serological status because of previous testing. Excluding those who already knew their positive status, the HIV seroprevalence rate was 10.6% (CI: 8.8–12.5%; 118/1118). The remaining 1118 pregnant women who did not know their status before testing or were negative at previous tests were asked to assess their risk of being HIV infected. This risk was rated as zero by 11/1118 (1.0%), as low by 1074/1118 (96.0%) and as high by 33/1118 (3.0%), without correlation with actual HIV serostatus. Mean age of non-VCT mothers was 24.7 years ($\sigma \pm 5.6$). Among tested mothers, mean ages of HIV- and HIV+ women were 25.4 years ($\sigma \pm 5.4$) and 28.5 years ($\sigma \pm 5.0$) respectively ($P < 0.00001$). Uptake rate of VCT increased linearly with age (Table 1), being particularly low among adolescents (15–19 years). The HIV seroprevalence rate also significantly increases with age at univariate analysis ($P < 0.00000001$).

Table 1 HIV status of pregnant women presenting to St Camille Medical Center for vvisit from May 2002 to April 2004 by age class and VCT acceptance

Age (years)	Women receiving ante-natal visit	VCT mothers (%)	HIV prevalence (%)
13–19	1103	118 (10.7)	6 (5.1)
20–24	2399	414 (17.3)	46 (11.1)
25–29	1758	366 (20.8)	70 (19.1)
30–34	866	207 (23.9)	63 (30.4)
35–47	513	110 (21.4)	30 (27.3)
Total	6639	1.215 (18.3)	215 (17.7)

HIV-seropositive pregnant women were more likely to have more previous pregnancies, dead children and abortions (Table 2) than HIV-seronegative women and to those women who did not accept VCT. In univariate analysis predictive factors of compliance to VCT were: increasing advanced age, previous pregnancies, number of dead children and number of miscarriages (Table 3). All these factors retained significance as independent factors predicting compliance to VCT when multiple logistic analysis was performed (Table 4a)

To control for possible bias, the same analysis was conducted after exclusion of the 97 HIV+ pregnant women who were aware of their serostatus before accepting VCT. Apart from the number of dead children, the remaining three predictive factors (age, number of previous pregnancies, number of of miscarriages) resulted in dependent predictive factors of compliance to VCT (Table 4b). Of the

Table 2 Obstetrical history of pregnant women presenting to St Camille Medical Center for ante-natal visit from May 2002 to April 2004 by VCT acceptance and HIV serostatus

Obstetrical history (episodes, mean)	VCT acceptance		
	No (<i>n</i> 5424)	Yes (<i>n</i> 1215)	
		HIV- (1000)	HIV+ (215)
Previous pregnancies	1.64 ($\sigma \pm 1.76$) $P = 0.1551$ $P = 0.0032$	1.72 ($\sigma \pm 1.72$) $P = 0.0115$	2.04 ($\sigma \pm 1.66$)
Living children	1.24 ($\sigma \pm 1.41$) $P = 0.6994$ $P = 0.1514$	1.26 ($\sigma \pm 1.94$) $P = 0.1073$	1.10 ($\sigma \pm 1.22$)
Dead children	0.28 ($\sigma \pm 0.63$) $P = 0.6422$ $P = <0.0001$	0.27 ($\sigma \pm 0.60$) $P = <0.0001$	0.60 ($\sigma \pm 0.81$)
Miscarriages	0.13 ($\sigma \pm 0.43$) $P = <0.0001$ $P = <0.0001$	0.20 ($\sigma \pm 0.50$) $P = 0.0001$	0.35 ($\sigma \pm 0.65$)

S. Pignatelli *et al.* **Uptake rate of VCT: predictive factors**

Outcome = uptake of VCT	Odds ratio	P-value	95% CI
Age (years)	1.039	<0.001	1.028-1.050
Age classes (years)			
20-24 (<i>n</i> 2.399) vs. 13-19 (<i>n</i> 1.103)	1.741	<0.001	1.399-2.166
25-29 (<i>n</i> 1.758) vs. 13-19 (<i>n</i> 1.103)	2.195	<0.001	1.756-2.743
30-34 (<i>n</i> 866) vs. 13-19 (<i>n</i> 1.103)	2.622	<0.001	2.049-3.355
35-47 (<i>n</i> 513) vs. 13-19 (<i>n</i> 1.103)	2.278	<0.001	1.714-3.028
Previous pregnancies	1.043	0.016	1.008-1.080
Living children	0.995	0.839	0.952-1.041
Living children (classes)			
1 (<i>n</i> 1.735) vs. 0 (<i>n</i> 2.654)	1.123	0.143	0.961-1.311
2 (<i>n</i> 1.078) vs. 0 (<i>n</i> 2.654)	0.976	0.802	0.811-1.176
3 (<i>n</i> 652) vs. 0 (<i>n</i> 2.654)	1.096	0.409	0.881-1.365
4 (<i>n</i> 311) vs. 0 (<i>n</i> 2.654)	1.105	0.512	0.820-1.490
>4 (<i>n</i> 536) vs. 0 (<i>n</i> 2.654)	0.805	0.281	0.543-1.194
Dead children	1.134	0.008	1.033-1.242
Dead children (classes)			
1 (<i>n</i> 1.020) vs. 0 (<i>n</i> 5.242)	1.233	0.014	1.043-1.457
2 (<i>n</i> 279) vs. 0 (<i>n</i> 5.242)	1.370	0.033	1.026-1.830
>2 (<i>n</i> 98) vs. 0 (<i>n</i> 5.242)	1.205	0.462	0.733-1.979
Miscarriages	1.444	<0.001	1.283-1.624
Miscarriages (classes)			
1 (<i>n</i> 655) vs. 0 (<i>n</i> 5.843)	1.740	<0.001	1.444-2.097
2 (<i>n</i> 100) vs. 0 (<i>n</i> 5.843)	2.178	<0.001	1.418-3.346
>2 (<i>n</i> 41) vs. 0 (<i>n</i> 5.843)	2.006	0.044	1.020-3.945

Table 3 Univariate logistic analysis of demographic and obstetrical factors predicting compliance to VCT**Table 4** Multiple logistic analysis of demographical and obstetrical factors predicting compliance to (a) VCT; (b) VCT after exclusion of the 97 pregnant women who were already aware of their infection before undergoing VCT

Outcome = uptake of VCT	Odds ratio	P-value	95% CI
(a)			
Age (years)	1.080	<0.001	1.062-1.098
Previous pregnancies	0.787	<0.001	0.737-0.840
Dead children	1.248	<0.001	1.112-1.402
Miscarriages	1.668	<0.001	1.457-1.909
(b)			
Age (years)	1.063	<0.001	1.045-1.081
Previous pregnancies	0.839	<0.001	0.784-0.897
Dead children	1.116	0.080	0.987-1.262
Miscarriages	1.566	<0.001	1.362-1.800

215 seropositive pregnant women, 41 (19.1%) were lost to follow-up at post-test counselling, during pregnancy or before the newborn attained age 18 months. Of the 138 pregnant women who had delivered by the time this was written, 120 took the prescribed dose of nevirapine.

Only 81 partners (6.6%) of the 1215 pregnant women who accepted VCT agreed to be tested, 51/1000 (5.1%) being partners of HIV- women (5.1%; HIV infection

detected in 1/51 = 2%) and 30/215 (4.0%) being partners of HIV+ women (infection detected in 15/30 = 50%).

Discussion

In pilot experiences and clinical trials, when HIV counselling and testing is actively and intensively promoted, the VCT uptake rate is reported to be satisfactorily high, reaching 80-90% of pregnant women attending ante-natal visits at PTMTC sites in various African sites (Bangendanye *et al.* 2004; Ekouevi *et al.* 2004). In the real-life field situation, however, integration of HIV counselling into ante-natal services may provide lower figures as the uptake rate of VCT tends to decrease (Meda *et al.* 2002) with high loss to follow-up before delivery (Buhendwa *et al.* 2004) or delivery taking place outside (Quaghebeur *et al.* 2004).

In Burkina Faso, the use rate of VCT services in the frame of the PMTCT national programme, even when available at the well known and reputable SCMC in Ouagadougou, is still very low. An overall figure of 21.6% (7075/32 674) was reported in 2003 by the Family Health Directorate of the Ministry of Health, Burkina Faso (MoH/BF 2004). The same survey identified three factors possibly explaining the low rate: (i) poor autonomy in the Burkina female population, requiring male consent to accept the VCT proposal, (ii) social stigma of HIV/AIDS infection and

S. Pignatelli *et al.* **Uptake rate of VCT: predictive factors**

(iii) fear of not having access to effective treatment. This is not surprising: HIV/AIDS prevention campaigns in previous years have often focused on the need to prevent lethal HIV infection due the unavailability of effective care. Mass educational campaigns about the effectiveness of HAART are in their infancy and access to antiretroviral drugs is scarce and limited to few selected centers. It is conceivable that increasing availability of HAART to treat the mother and the partner will increase VCT uptake, even if contrasting results have been reported (Day *et al.* 2003).

A recent report from Mali suggested that a high degree of denial of the existence of HIV is a significant obstacle to the acceptance of VCT in the general population (Castle 2003). Another factor that may have limited the VCT acceptance rate at SCMC is that individual VCT is proposed after a more generic daily group educational session addressing all aspects of health in pregnancy, thus requiring a two-step approach. We are forced to use this approach as the high number of pregnant women attending the mother and child outpatient clinic for ante-natal care (>50/day) makes routine individual counselling sessions (at least 20 min) impossible. Furthermore, because of the limited antiretroviral drugs available at our centre, access to triple therapy in case of proven HIV infection has not been used as an incentive yet.

The pregnant population in Ouagadougou has a very high level of trust in St Camille Medical Centre, which is reflected in the high acceptance rates of other activities offered there. For example, voluntary screening for syphilis, which is relatively expensive at 1.5 US\$, has an acceptance rate >80% every year. Trusting in the professionalism and confidentiality of the health structure is a key factor in assuring the success of VCT (Fylkesnes & Siziya 2004).

Pregnant women who accept VCT at St Camille probably represent a highly motivated minority, as nearly all were tested and reported to post-test counselling. Moreover, acceptance of VCT usually occurs as early as the first ante-natal visit, suggesting high motivation. We believe that the use of rapid tests has been instrumental in minimizing loss to follow-up at this step (Malonza *et al.* 2003). However, 41/215 (19.1%) HIV infected women were lost to follow-up before the newborn attained 18 months, mainly because of difficulties in transportation from the rural area to the city.

Compliance with nevirapine administration is high and the proportion of HIV+ women lost to follow-up after delivery is remarkably low, which demonstrates once again the motivation of those women who undergo the PMTCT programme. The close clinical and biological monitoring schedule may also induce a progressively increasing trust

into the health structure that prevents mothers to abandon the programme.

Even when excluding women who were already aware of their serostatus, HIV seroprevalence among those accepting VCT was significantly higher (10.6%) than among an anonymously and randomly selected general population of pregnant women (4.8% in 2002) attending ante-natal visits. The higher HIV seroprevalence in our study, compared with a random blind sero-survey of pregnant women at St Camille (HIV seroprevalence: 4%), suggests that women who take up VCT represent a selected and motivated population who feels at risk, despite the fact that personal risk was perceived to be low. This may lead to the identification of a significant proportion of HIV-infected women in our cohort. These apparently discordant findings may be partly because of the social stigma that closely links HIV infection, which reprehensible sexual behaviour that puts only bad persons at risk. In fact, other studies focusing on the factors influencing the acceptability of VCT in other settings identified perception of HIV risk as one of the driving forces to undergo VCT (Fylkesnes & Siziya 2004).

A few factors independently favour acceptance of VCT. The uptake rate independently increases with age, possibly because of awareness of a higher cumulative risk of infection with age and the fact that older women are more likely to take autonomous decisions. However, a cohort effect linked to the decreasing HIV seroprevalence trend nationwide may not be excluded. This result is in agreement with other African experiences and seems to reflect a common pattern (Kowalczyk *et al.* 2002).

The number of previous miscarriages was also predictive of acceptance of VCT in our pregnant population, independently from age at presentation. On the contrary, the higher the number of previous pregnancies, the lower the rate acceptance of VCT in our pregnant population in our multivariate analysis. This finding agrees with previous reports (Stringer *et al.* 2003) and indicates a more positive attitude towards VCT by women with negative obstetric antecedents which may be attributed to HIV infection and induces them to be tested and treated to avoid further unsuccessful childbearing. The value of fertility in the Burkina context, as it is in most African countries, cannot be overemphasised. As Salihu *et al.* (2003) reported, HIV+ women have more previous pregnancies than HIV- women. Other studies from Burkina Faso have suggested that HIV infected women may have impaired fertility (Yaro *et al.* 2001).

Finally, the extremely low involvement of partners in the PMTCT-plus is to be underlined. Our data do not allow us to identify the reasons for this low participation rate, which confirms previous reports from Burkina Faso (Nebie *et al.* 2001). The women may not have informed their

S. Pignatelli *et al.* **Uptake rate of VCT: predictive factors**

partners of her acceptance of the VCT (and more so in case of positive result) for fear of being blamed for their autonomous decision. On the contrary, even the informed partner may have refused to be tested for fear of the infection and the associated stigma. In our study 50% (15/30) of the partners of HIV+ women tested negative, raising very embarrassing situations that need to be handled with care by well-trained and skillful professionals at the PMTCT Center. Disclosure of the HIV serostatus to the partner is crucial for the successful management of the present and future pregnancies and represents the real challenge of any VCT programme. In fact, adequate support to the male partner, emphasising the fact that female HIV seropositivity is not equivalent to adultery, may prevent female rejection, a very dangerous situation in resource-poor settings. Recent reports from Tanzania suggest that positive support from the male partner is possible and realistic (Maman *et al.* 2003).

From the operational point of view, the choice to use two sequential rapid tests proved optimal, leading to a very low rate of loss to follow-up and immediate post-test counselling. Discordant results between the two rapid tests were exceptional and could be easily handled by standard ELISA test. HIV2 or HIV1/HIV2 mixed infections were rare in our experience and the need to use zidovudine was then reduced. However, >75% of pregnant women accepting VCT did so in the first two quarters of pregnancy, suggesting that earlier and more aggressive HAART protocols could also be reliably used should need arise because of the feared emergence of nevirapine resistant strains as a consequence of the scaling up of nevirapine-based HAART regimens in the African continent.

Conclusions

The cost of antiretroviral drugs has been reduced to such an extent that it is now possible to conceive the scaling-up of antiretroviral therapy even in poor settings, such as most sub-Saharan African countries. In this scenario, VCT is a key element to identify HIV infected subjects who may benefit from therapeutic interventions in the context of PMTCT and/or PMTCT-plus programmes.

Our experience shows that VCT may easily be integrated into routine ante-natal activities even in large urban health-care facilities. However, for the time being, only a selected minority of pregnant women accepts to undergo the VCT process, possibly because of the social stigma associated to HIV/AIDS and to the perception that no treatment is currently available. A mixed strategy (VCT plus universal administration of nevirapine to those pregnant women who refuse VCT) could also lead to a

higher number of prevented pediatric infections. Sensibilization campaigns spreading the notion that HIV infection is not necessarily linked to reprehensible behaviour and that HIV/AIDS is treatable (Maman *et al.* 2003), as well as the scaling up of PTMTC and PTMTC-plus and their complete integration into health services, could have a positive impact on VCT acceptance rates. Furthermore, the 'completely opt-in approach' may limit adherence to VCT, but it does select highly motivated women with a low dropout rate.

The independent role of increasing age in favouring the acceptance of VCT probably reflects cultural and social customs specific to the Burkina society that impose a higher degree of submission to the male partner in younger women. The number of previous pregnancies and of previous abortions also influences the acceptance rate, independently from age, perhaps because pregnant women link HIV infection and unsuccessful outcome of previous pregnancies.

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References

- Bangendanye L, Ngabonziza M & Murray D (2004) Increasing the successful of PTMTC programs: an experience from Rwanda. In: *XV International AIDS Conference*, Bangkok (Thailand), 11–16 July 2004, abstract ThPeB7101.
- Buhendwa ML, Kazima GJ, Teck R & Manzi M (2004) High uptake for PTMTC-VCT but high loss to follow-up before delivery. What are the options for PMTCT programmes? In: *XV International AIDS Conference*, Bangkok (Thailand), 11–16 July 2004, abstract ThPeE7984.
- Castle S (2003) Doubting the existence of AIDS: a barrier to voluntary counselling and testing in urban Mali. *Health Policy and Planning*, **18**, 146–155.
- CMSC (2004) *Prévention de la Transmission Mère – Enfant du VIH/SIDA (PTME)*. Rapport Technique no. 1 (Août 2002), no. 2 (Février 2003), no. 3 (Août 2003), no. 4 (Février 2004). Centre Médical St Camille de Ouagadougou, ?????.
- Day JH, Miyamura K, Grant AD *et al.* (2003) Attitudes to HIV voluntary counselling and testing among mineworkers in South Africa: will availability of antiretroviral therapy encourage testing? *AIDS Care – Psychologic and Socio-medical Aspects of HIV/AIDS* **15**, 665–672.
- Ekouevi DK, Leroy V, Viho I *et al.* for the ANRS 1201/1202 Ditrane Plus Study Group (2004) Acceptability and uptake of a package to prevent mother-to-child transmission using rapid HIV testing in Abidjan, Côte d'Ivoire. *AIDS* **18**, 697–700.
- Fylkesnes K & Siziya S (2004) A randomized trial on acceptability of voluntary counselling and testing. *Tropical Medicine and International Health* **9**, 566–572.
- Guay LA, Musoke P & Fleming T (1999) Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of mother-to-child transmission of HIV-1 in Kampala, Uganda: HIVNET 012 randomised trial. *The Lancet* **354**, 795–804.
- Koblavi-Deme S, Maurice C, Yavo D *et al.* (2001) Sensitivity and specificity of human immunodeficiency virus rapid serologic assays and testing algorithms in an ante-natal clinic in Abidjan, Ivory Coast. *Journal of Clinical Microbiology* **39**, 1808–1812.
- Kowalczyk J, Jolly P, Karita E, Nibarere JA, Vyankandindera J & Salihu H (2002) Voluntary counselling and testing for HIV among pregnant women presenting in labor in Kigali, Rwanda. *Journal of Acquired Immune Deficiency Syndromes* **31**, 408–415.
- Malonza IM, Richardson BA, Kreiss JK, Bwayo JJ & Stewart GCJ (2003) The effect of rapid HIV-1 testing on uptake of perinatal HIV-1 interventions: a randomized clinical trial. *AIDS* **17**, 113–118.
- Maman S, Mbwambo JK, Hogan NM, Weiss E, Kilonzo GP & Sweat MD (2003) High rates and positive outcomes of HIV-serostatus disclosure to sexual partners: reason for cautious optimism from a voluntary counselling and testing clinic in Dar Es Salaam, Tanzania. *AIDS and Behaviour* **7**, 373–382.
- MED/BF (2004) *Enquête Démographique et de Santé 2003. Rapport préliminaire*. Ministry of Economics and Development, Burkina Faso (MED/BF), Institut National de la Statistique et de la Démographie (INSD), p. 34.
- Meda N, Leroy V, Viho I *et al.* (2002) Field acceptability and effectiveness of the routine utilization of zidovudine to reduce mother-to-child transmission of HIV-1 in West Africa. *AIDS* **16**, 2323–2328.
- MoH/BF (2000) *Programme National de Prévention de la Transmission Mère – Enfant du VIH: 2001–2005*. Ministry of Health, Burkina Faso (MoH/BF), Direction de la Santé de la Famille.
- MoH/BF (2003) *Conseil National de Lutte contre le Sida et les Infections Sexuellement Transmissibles (CNLS-IST), Ouagadougou (Burkina Faso). SIDA rétro-infos. Bulletin de retro information sur le SIDA 2003*. Ministry of Health, Burkina Faso.
- MoH/BF (2004) *Enquête sur les facteurs limitant l'adhésion des femmes enceintes au CDV. Résultats provisoires*. Ministry of Health, Burkina Faso (MoH/BF), Direction de la Santé de la Famille.
- Nebié Y, Meda N, Leroy V *et al.* (2001) Sexual and reproductive life of women informed of their HIV seropositivity: a prospective cohort study in Burkina Faso. *Journal of Acquired Immune Deficiency Syndromes* **28**, 367–372.
- Quaghebeur ASM, Mutunga LN, Mwanyumba F, Mandaliya K & Temmerman M (2004) Uptake of the HIVNET012 regimen in a real-life situation. In: *XV International AIDS Conference*, Bangkok (Thailand), 11–16 July 2004, abstract ThPeB7030.
- Salihu HM, Nnedu ON, Karita E, Vyankandindera J & Jolly PE (2003) Predictors of HIV seropositivity following intrapartum voluntary counselling and testing among Rwandan woman. *Journal of Obstetric and Gynaecology* **23**, 632–636.
- Shaffer N, Chuachoowong R, Mock PA *et al.* (1999) Short-course zidovudine for perinatal HIV-1 transmission in Bangkok, Thailand: a randomised controlled trial. *The Lancet* **353**, 773–780.
- Stringer JSA, Sinkala M, Stout JP *et al.* (2003) Comparison of two strategies for administering nevirapine to prevent preinatal HIV transmission in high-prevalence, resource-poor countries. *Journal of Acquired Immune Deficiency Syndromes* **32**, 506–513.
- UNDP (2001) *Burkina Faso, Rapport sur le Développement Humain 2001*. United Nations Development Program, ?????, p. 101.
- UNICEF (2002) *Infant Feeding and Mother-to-child Transmission of HIV*. Operational guidance note. ?????, ?????.
- UNICEF (2003) *Regional Workshop of PMTCT Focal Points (West and Central Africa)*. Dakar, Sénégal (October 2003).
- WHO (2001) *Prevention of Mother-to-child Transmission of HIV: Selection and Use of Nevirapine*. Technical Notes. World Health Organisation, Geneva.
- WHO (2002) *Scaling Up Antiretroviral Therapy in Resource-limited Settings – Guidelines for a Public Health Approach*. 2002 and 2003 revision. World Health Organisation, Geneva.
- WHO (2003) *Prévention de la transmission mère-enfant du VIH au Burkina Faso. Une démarche contractuelle originale, Etude de cas*. World Health Organisation, Geneva.
- WHO (2004) *Antiretroviral Drugs for Treating Pregnant Women and Preventing HIV Infections in Infants. Guidelines for Care, Treatment and Support for Women Living With HIV/AIDS and their Children in Resource-constrained Settings*. 2004 revision. World Health Organisation, Geneva.

S. Pignatelli *et al.* **Uptake rate of VCT: predictive factors**

Yaro S, Meda N, Desgrées Du Lou A *et al.* (2001) Impaired fertility associated with HIV-1. Implications for ante-natal clinic-

based HIV sentinel surveillance. *Revue d'Epidemiologie et de Santé Publique* 49, 221–228.

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Facteurs prédisant l'acceptation du conseil et dépistage volontaire du VIH dans un centre mère-enfant à Ouagadougou

OBJECTIF Identifier les facteurs prédisant l'acceptation du conseil et de dépistage volontaire du VIH chez les femmes enceintes.

MÉTHODES Toutes les femmes enceintes prenant part à l'éducation de groupe sur la santé anténatale au Centre Médical de St Camille à Ouagadougou, Burkina-Faso entre le 1er mai 2002 et le 30 avril 2004 ont été proposées un conseil et dépistage volontaire du VIH. Les femmes consentantes ont été conseillées avant le test, ont subi deux tests rapides donnant des résultats immédiats et ont reçu des conseils après le test.

RÉSULTATS Moins d'1/5^e des femmes (1216/6639; 18.3%; IC: 17.4–19.3) ont accepté le conseil et dépistage volontaire du VIH, principalement à la 1ère visite anténatale (83.4%) et tôt au début de la grossesse (73.45 avant la 24ème semaine). Le taux de séroprévalence était de 10.6% (8.8–12.5%). Le taux d'acceptation était indépendant de l'âge, du nombre de grossesses et du nombre de fausses couches précédentes.

CONCLUSIONS Notre approche à deux étapes composée d'une éducation de groupe suivie du conseil et dépistage volontaire du VIH a obtenu un faible rendement dans ce milieu. Cependant, le taux des abandons après le recrutement dans le programme était presque nul. Le délai à l'acceptation dans le programme permettrait l'implémentation de régimes prophylactiques à temps. Une mesure efficace des conseils et dépistages volontaires du VIH en dehors d'essais cliniques requiert une campagne de sensibilisation de masse qui insisterait sur les bénéfices du programme et s'attaquerait à la stigmatisation liée au VIH. La part indépendante de l'âge et des épisodes obstétricaux précédents montre comment l'importance des facteurs sociaux influence le taux d'acceptation du conseil et dépistage volontaire du VIH.

mots clés VIH, conseil et dépistage volontaire, facteurs prédictifs

Factores predictores de la aceptación del Aconsejamiento Voluntario y Prueba de VIH/SIDA en un centro aconsejamiento y prueba para prevención de transmisión vertical en Ouagadougou

OBJETIVO Identificar factores que predicen el aceptar el aconsejamiento voluntario y prueba de VIH/SIDA en mujeres embarazadas

MÉTODOS Se ofreció aconsejamiento voluntario y prueba de VIH a todas las mujeres embarazadas que recibieron educación grupal antenatal en el centro médico de St. Camille, en Ouagadougou, Burkina Faso, entre el 1 de Mayo del 2002 y el 30 de Abril del 2004. Si consentían participar, se les realizaba el aconsejamiento pre-test, se les hacía la prueba con dos test rápidos cuyos resultados eran entregados inmediatamente, y finalmente se les daba aconsejamiento post-prueba.

RESULTADOS Menos de una quinta parte de las mujeres embarazadas aceptaron el aconsejamiento voluntario y prueba de VIH (1.216/6.639 (18.3%, IC: 17.4–19.3%), principalmente durante la primera visita antenatal (83.4%) y con una edad gestacional temprana (73.4% antes de la semana 24). La tasa de seroprevalencia de VIH fue de 10.6% (8.8–12.5%). La tasa de aceptación estaba independientemente asociada con la edad, el número de embarazos previos y el número de abortos previos.

CONCLUSIONES Nuestro enfoque de dos pasos: educación grupal seguida por aconsejamiento voluntario y prueba, tuvo una baja tasa de aceptación en este lugar. Sin embargo, la tasa de abandono una vez aceptaban participar en el programa fue de casi cero. La respuesta oportuna al programa permitiría la implementación temprana de medidas profilácticas. La masificación efectiva del aconsejamiento voluntario y prueba de VIH no asociada a ensayos clínicos requiere campañas de sensibilización masiva que muestren los beneficios del programa y traten el estigma del VIH. El valor independiente de la edad y de episodios obstétricos previos, demuestra la importancia de los factores sociales a la hora de influir en el aconsejamiento voluntario para VIH y la tasa de aceptación de la prueba.

palabras clave VIH, aconsejamiento voluntario y prueba, factores predictores

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