

ACCEPTANCE OF VOLUNTARY COUNSELLING, TESTING AND TREATMENT FOR HIV AMONG PREGNANT WOMEN IN KUMASI, GHANA

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SUMMARY

Background: Voluntary counselling and testing (VCT) for human immunodeficiency virus (HIV) and treatment of positive pregnant women can reduce mother to child transmission (MTCT) of HIV.

Objective: This study was conducted to assess acceptance of HIV VCT and antiretroviral therapy (ART) by pregnant women in Kumasi, Ghana, before and after VCT and ART were available.

Methods: Two cross-sectional studies were conducted among women in antenatal clinics. The first, in 2003 among 501 women, before VCT and ART were available in Kumasi. Women who were willing were counselled and tested for HIV. In 2005, after the introduction of VCT and ART by the Ghana Health Service, 675 pregnant women were surveyed regarding HIV/VCT acceptance and uptake.

Results: In 2003, 98% of women accepted counselling and 97% accepted testing; 3.3% tested HIV positive. Multivariate analysis showed that women with secondary education were 88% less likely than those with no/primary education to accept testing (OR=0.12, CI=0.03-0.54, p=0.006). Women who had prior HIV testing were 95% less likely to accept testing (OR=0.05, CI=0.01-0.19, p=0.0001). Women who reported two sexual partners in the past year were 6 times as likely to be HIV positive than those reporting one sexual partner (OR=5.76, CI=1.53 – 21.69, p<0.05). In 2005, 76% of women reported no prior HIV counselling and 78% no testing.

Conclusions: In 2003, there was wide uptake of VCT by prenatal women. However, in 2005 the majority of pregnant women were not accessing the available VCT services.

Keywords: HIV, voluntary counselling and testing (VCT), pregnant women, Ghana

INTRODUCTION

Although the adult prevalence of human immunodeficiency virus (HIV) infection and acquired immune deficiency syndrome (AIDS) is currently much lower in

Ghana (2.2%) than in most other African countries, the disease has become firmly established within the general population and shows no sign of stabilizing.¹ By June 2002, Ghana had recorded a total of 58,013 HIV/AIDS cases since 1986 and greater than 90% were in the 15-49 age group.² Currently, it is estimated that 320,000 Ghanaians are living with HIV/AIDS.³ Heterosexual transmission is the dominant route of HIV infection and accounts for 80% of new infections.⁴⁻⁶ Of the cumulative AIDS cases recorded in the country, 64% are females, while 36% are males.^{4,6} Approximately 40% of pregnant women in Africa are infected with HIV⁴ and without antiretroviral intervention, 21%-43% transmit the infection to their babies during pregnancy, labour and delivery.⁷⁻⁸ Over 90% of the 1.1million children less than 15 years living with HIV in sub-Saharan Africa by the end of 2000 acquired the infection from their mothers.⁹ Mother-to-child transmission (MTCT) is the second most important route of HIV transmission in sub-Saharan Africa.

Voluntary counselling and testing (VCT) has been identified as an effective tool in reducing HIV transmission.¹⁰ It has been shown to provide behaviour change and emotional support for those who test positive for HIV¹¹ and to be feasible and acceptable in reducing perinatal transmission of the virus.¹² VCT, supported with pre- and postnatal antiretroviral therapy (ART) of HIV positive women and their infants, and appropriate infant feeding are effective in reducing MTCT of HIV.^{13,14} Studies show that in many African settings, pregnant women will accept VCT if it is offered. The median acceptance rate of VCT in these studies was 69% (range 33%-95%).^{15,16} Acceptance of VCT has been found to be conditionally based on benefits such as availability of antiretroviral drugs and infant feeding counselling.¹⁷ In contrast to a study conducted in France, the reasons for VCT acceptability in African countries were not based on social and public advocacy but on the confidence that the women held in the health care workers.

In many African countries, pregnant women are accustomed to following the advice of their health care workers.¹⁷ Unfortunately, in some settings, VCT is offered but is refused by women due to social and cultural stigmas attached to HIV. This prevents treatment intervention for the unborn child.¹⁸ In Africa, these include fear of stigmatization, divorce and fear of losing confidentiality¹⁹, limited decision making power by women²⁰, and fear of discrimination during delivery, separation from spouse, and domestic violence.²¹

We conducted this study to assess acceptance or refusal of VCT for HIV (and ART if positive) among pregnant women in Kumasi in two different eras, namely, before and after the introduction of VCT and ART intervention in antenatal clinics in the region. In the first study, women who were willing to accept HIV testing after counselling were tested. We also collected and analyzed data on the reasons for acceptance or refusal of VCT by the women in order to understand the factors related to acceptance of VCT and ART. This is essential in overcoming barriers that prevent success of MTCT prevention intervention.

METHODS

From July to August 2003, we conducted a cross-sectional study of a convenient sample of 501 pregnant women aged 15-45 years who attended the Manhyia Polyclinic in Kumasi, for prenatal care. This clinic is one of the main polyclinics in Kumasi with a high antenatal attendance (approximately 105 women per day). No VCT or ART services were available in this clinic at that time but we offered these services as an integral part of this study. All women attending the clinic during the study period were informed of the study and encouraged to participate. If the study was not being conducted on a particular day, the women attending the clinic on that day were given a date to return if they wanted to participate. Women were included regardless of gestational age. Potential participants were given copies of the informed consent form, the form was read aloud and the purpose and procedures of the study were explained. All questions from participants were addressed before they were asked to sign the consent form if they were willing to participate. Participants who could not write were asked to give a thumbprint to signify their willingness to participate.

Women who gave informed consent were administered a questionnaire consisting of items on socio-demographic and behavioural factors including history of sexually transmitted diseases (STDs), willingness to undertake VCT, acceptability of treatment if positive and reasons for acceptance or refusal of VCT and ART. Once the questionnaire was completed, each participant was given a confidential one-on-one counsel-

ling session in a private area by a trained HIV counsellor. The messages covered included the importance of HIV testing for the participant and her partner, the risk of MTCT of HIV, and the treatment options available to the mother and the child for reducing the chance of transmission if she is found to be HIV positive. Two trained HIV counsellors who were also midwives at the clinic participated in the study. Once the pre-test counselling was completed, the HIV counsellor asked the participant if she would like to be tested for HIV. Testing was optional and each participant was free to decline the service. If the participant agreed to the testing, she was referred to the laboratory technician who performed a rapid HIV test (Determine HIV -1/2, Abbott Laboratories, Abbott Park, IL USA). If the participant tested positive for HIV or had an indeterminate test result, the result was checked using the RapiTest HIV1 & 2 kit (Morwell Diagnostics GmbH, Egg/ZH, Switzerland). Once the participant's result was available, it was given to the HIV counsellor and the participant was given post-test HIV counselling regardless of sero-status. Women who tested positive on both tests were offered nevirapine treatment for HIV at labour and for their newborn at delivery free of charge. Approval for the study was obtained from the Institutional Review Board of the University of Alabama at Birmingham and from the Kumasi Metro Health Directorate, Ghana Health Service, Kumasi.

In 2005, after VCT services were widely established in Kumasi by the Ghana Health Service, we surveyed 675 pregnant women at the Manhyia, Suntreso and Kumasi South antenatal clinics regarding VCT acceptance and uptake. HIV testing was not offered to these participants as a part of the study but was available as a part of the clinic service.

Statistical Analysis

Data for the 501 women in the 2003 study were analyzed using the Statistical Analysis System (SAS) Software version 9.0 (SAS, Cary NC). Descriptive statistics were used to determine HIV/AIDS knowledge of participants, willingness of participants to accept VCT, and differences between those who accepted VCT and those who did not. Chi square tests were performed to investigate the effects of socio-demographic and behavioural factors on HIV status and willingness to accept VCT. Logistic regression was also performed to produce odds ratios of association of VCT acceptance and the social and behavioural factors reported in the questionnaire and tables. Data for the 675 women in the 2005 study were analyzed using the Statistical (SAS) Software version 9.1 (SAS, Cary, NC). Descriptive statistics were also used to determine socio-demographic and behavioural risk factors, willingness

to accept and actual uptake of HIV counselling and testing.

RESULTS

Socio-demographic and Behavioural Factors, and HIV Knowledge

Ninety seven percent of the 501 pregnant women who participated in the study in 2003 accepted VCT services. Majority (93.6%) of the women were between 15-35 years and greater than a quarter (29%) had no school education (Table 1). A majority of women were married (67.1%) or in a cohabiting relationship (22.2%), and 88.2% reported having only one sexual partner within the past year. Approximately 92% of the women had not previously been tested for HIV, and 69.9% had not received previous HIV counselling.

Table 1 Socio-demographic and Behavioural Risk Factors for Study Participants, 2003 (N=501)

| Characteristics | N | % |
|---|-----|------|
| Age | | |
| 15-25 | 253 | 50.5 |
| 26-35 | 216 | 43.1 |
| 36-45 | 32 | 6.4 |
| Education | | |
| None | 144 | 28.7 |
| Primary | 175 | 34.9 |
| Secondary | 178 | 35.6 |
| Tertiary | 4 | 0.8 |
| Marital Status | | |
| Single/Widowed/Divorced | 54 | 10.8 |
| Cohabit | 111 | 22.2 |
| Married | 336 | 67.1 |
| Number of sexual partners (in the past year) | | |
| One | 442 | 88.2 |
| Two | 43 | 8.6 |
| Three or more | 16 | 3.2 |
| Contraceptive use | | |
| None | 376 | 75.1 |
| Sometimes | 89 | 17.8 |
| Always | 36 | 7.2 |
| Previous STDs | | |
| No | 479 | 95.6 |
| Yes | 22 | 4.4 |
| Self-reported previous use of VCT | | |
| No Prior HIV testing | 459 | 91.6 |
| Prior HIV testing | 42 | 8.4 |
| No Prior HIV counselling | 350 | 69.9 |
| Prior HIV counselling | 151 | 30.1 |

STDs=sexually transmitted diseases, HIV=human immunodeficiency virus, VCT=voluntary counselling and testing

The majority of participants were knowledgeable about HIV/AIDS. Ninety two percent knew that HIV destroys the immune system and causes AIDS, 99% knew that HIV was transmitted sexually, and 87% knew that the virus could be transmitted to their unborn child. Most (88%) knew that condom use can reduce the risk of infection and 68% percent knew that someone could be asymptomatic yet be infected. However, the majority of participants (67%) did not know or believe that there were drug treatments that could reduce the chance of transmission of HIV to their unborn babies.

Participants' expressed willingness to accept VCT and actual uptake of VCT

Ninety eight percent of the women expressed willingness to accept counselling and 92.2% expressed willingness to be tested. Of the 39 women who were unwilling to accept, or who were undecided about testing, 25 (64%) actually accepted testing after going through HIV counselling. Therefore, the rate of actual test acceptance was 97.2%. The reasons given by participants for being unwilling/undecided to get tested were fear (70%), need to consult partner prior to testing (15%), no medicinal cure available (5%), and did not believe themselves to be at risk (1%). The reasons reported for being unwilling/undecided to be counselled were that the counselling would not be helpful, did not want to hear more about HIV, had received previous counselling, and had no time. When asked about their willingness to accept nevirapine treatment to reduce HIV transmission to their unborn child, 93.2% of the women indicated willingness to accept nevirapine if found HIV positive. Reasons reported by the 6.8% (n=34) of women who said they would not accept treatment were that the treatment would be helpful, did not believe they could transmit the infection to their unborn child, did not believe there was a need to protect the child if the mother would not be protected, and fear of the drug's side effects.

Socio-demographic and behavioural characteristics of women who accepted HIV testing

Table 2 shows the proportion of the women who accepted HIV testing by socio-demographic and behavioural risk factors in 2003. Women aged 15-25 years had a slightly higher rate of VCT acceptance than those in other age groups. Participation in the study decreased significantly ($p<0.0001$) among women with secondary/tertiary education. Women who reported no prior STD history had a slightly higher rate of VCT acceptance than those reporting prior history of STD ($p=0.0016$). Women without prior HIV testing had higher VCT acceptance rates than those with prior HIV testing ($p<0.0001$).

Of the women who accepted testing, 93% had no prior testing and 70% had no prior counselling. Those who had no prior HIV testing reported not being tested because they did not believe themselves to be at risk (58%), had no access to testing sites (16%), were not advised by a health professional (6%), did not know testing was available (6%), testing costs (4%). Other reasons given by 10% of the participants included fear of test results, not feeling sick, fear of getting blood drawn, and the amount of time needed for the testing. Most (87.8%) of those who had prior HIV testing were tested over a year ago, and 73.2% knew their test results.

Table 2 Socio-demographic and Behavioural Factors for Women Who Accepted HIV Testing, 2003 (N=487)

| Characteristics | Char- | N | Acceptance Rates |
|--|-------|-----|--------------------|
| Ages | | | |
| 15-25 | | 248 | 98.0 |
| 26-35 | | 208 | 96.3 |
| 36-45 | | 31 | 96.9 |
| Education | | | |
| None | | 144 | 100.0 |
| Primary | | 174 | 99.4 |
| Secondary / Tertiary | | 169 | 92.9 |
| | | | P<0.0001 |
| Marital status | | | |
| Single/Widow/Divorce | | 53 | 98.1 |
| Cohabit | | 110 | 99.0 |
| Married | | 324 | 96.4 |
| Number of sexual partners (in the past year) | | | |
| One | | 431 | 97.5 |
| Two | | 41 | 95.3 |
| Three or more | | 15 | 93.8 |
| Contraceptive use | | | |
| None | | 367 | 97.6 |
| Sometimes | | 86 | 96.6 |
| Always | | 34 | 94.4 |
| Previous STDs | | | |
| No | | 468 | 97.7 |
| Yes | | 19 | 96.0 |
| | | | P=0.0016 |
| Self Reported previous use of HIV testing | | | |
| No Prior HIV testing | | 454 | 98.9 |
| Prior HIV testing | | 33 | 78.6 |
| | | | P<0.0001 |
| No Prior HIV counselling | | 342 | 97.7 |
| Prior HIV counselling | | 145 | 96.0 |
| STDs=sexually transmitted diseases, HIV=human immunodeficiency virus | | | |
| All p-values are from chi square tests comparing differences between VCT participants by socio-demographic, and behavioural factors. Missing p-values are above the significance level of 0.05 | | | |

Adjusted odds ratios for VCT participation and HIV infection by socio-demographic and behavioural risk factors

Table 3 shows the results of multivariate analysis for the association between selected socio-demographic and behavioural risk factors and HIV test acceptance. Women with secondary education were 88% less likely than those with no education or primary education to accept testing ($p<0.05$) and those who had prior HIV testing were 95% less likely to accept testing than those without ($p<0.001$) (Table 3). Multivariate analysis was also conducted to examine the association between the socio-demographic and behavioural variables listed in Table 3 and HIV positive test result. Women who reported having two sexual partners in the past year were almost 6 times as likely to be HIV positive as those who reported having one sexual partner in the past year (OR=5.76, CI=1.53-21.69, $p<0.05$).

Comparison of willingness to accept VCT and treatment by pregnant women in Kumasi in 2003 and 2005

The age distribution, educational levels and marital status of the women interviewed in 2005 were similar to those interviewed in 2003. Table 4 shows that almost half (48%) of the women interviewed in 2005 felt that they were at high risk for HIV and that 94% were worried about infecting their babies with HIV. In both 2003 and 2005, approximately 98% of women said they were willing to accept HIV counselling, but a much higher percentage expressed willingness to accept HIV testing in 2003 (96%) than in 2005 (73%). Two-thirds of the women did not know there were treatments to prevent MTCT in 2003 compared with 45% in 2005. In both studies, the overwhelming majority of women expressed willingness to accept treatment if they were found to be HIV positive. The percentages of women who reported that they had not been offered HIV counselling and testing by a health worker were similar for both time points; 78% had not been tested for HIV in 2005 compared to 92% in 2003.

DISCUSSION

This study is one of the few attempts to investigate the willingness of prenatal women to accept VCT in Kumasi, a region which has one of the highest rates of HIV/AIDS in Ghana.^{6,22} It was the first study conducted at the Manhyia polyclinic and provides much needed baseline information in a resource limited setting in which VCT has been implemented.

Multivariate analysis of the 2003 data showed that educational level and prior HIV testing were predictors of acceptance of HIV testing. Education, prior HIV testing, and history of STDs have all been found to be associated with VCT acceptance.²³⁻²⁴

Table 3 Adjusted Odds Ratios for Accepting Testing by Socio-demographic and Behavioural Factors of Participants, 2003 (N=487)

| Covariates | Odds Ratio | 95% Confidence Intervals |
|--|------------|--------------------------|
| Age | | |
| 15-25 | Referent | |
| 26-35 | 0.54 | 0.13-2.29 |
| 36-45 | 0.58 | 0.04-7.96 |
| Education | | |
| None/Primary | Referent | |
| Secondary | 0.12* | 0.03-0.54 |
| Tertiary/Technical | 0.39 | 0.05-2.77 |
| Marital status | | |
| Single/Widowed/Divorce | Referent | |
| Cohabit | 2.59 | 0.12-56.94 |
| Married | 0.79 | 0.06-9.63 |
| Number of sexual partners (in the past year) | | |
| One | Referent | |
| Two | 0.46 | 0.16-1.27 |
| Three or more | 0.49 | 0.20-1.19 |
| Contraceptive use | | |
| None | Referent | |
| Sometimes | 0.58 | 0.12-2.90 |
| Always | 0.86 | 0.12-6.18 |
| Previous STDs | | |
| No | Referent | |
| Yes | 0.90 | 0.15-5.31 |
| Self-reported previous use of HIV testing | | |
| No Prior HIV testing | Referent | |
| Prior HIV testing | 0.05** | 0.01-0.19 |
| Self-reported previous use of HIV counselling | | |
| No Prior counselling | Referent | |
| Prior HIV counselling | 0.78 | 0.22-2.76 |
| STDs=sexually transmitted diseases; HIV=human immunodeficiency virus | | |
| *p<0.05 | | |
| **p<0.001 | | |
| Missing p-values are above the significance level of 0.05 | | |

In the 2003 study, women with secondary education were 88% less likely to accept testing than those with no formal or primary education. This finding may suggest that women with secondary education (or above) consider themselves at lower risk of infection and perceive that they have less need for testing than those with less education. Also, the results may indicate that those with no/primary education feel less competent to

Table 4 Willingness to Accept HIV VCT and Treatment if HIV positive by Pregnant Women in Kumasi, 2003 and 2005

| Characteristics | 2003 (N=501) | | 2005 (N=675) | |
|--|--------------|------|--------------|------|
| | N | % | N | % |
| I am worried about infecting my Child with HIV | | | | |
| Yes | N/A | | 633 | 93.9 |
| No | | | 30 | 4.5 |
| Don't know/missing | | | 11 | 1.6 |
| Would you accept HIV counselling? | | | | |
| Yes | 492 | 98.2 | 661 | 98.5 |
| No | 8 | 1.6 | 8 | 1.2 |
| Don't know | 1 | 0.2 | 2 | 0.3 |
| Willingness to accept HIV test | | | | |
| Yes | 462 | 95.7 | 483 | 72.6 |
| No | 17 | 3.5 | 59 | 8.9 |
| Already tested | N/A | N/A | 106 | 15.9 |
| Not sure | 4 | 0.8 | 17 | 2.6 |
| I feel I am at high risk for HIV | | | | |
| Yes | N/A | | 324 | 48.0 |
| No | | | 260 | 38.5 |
| Don't know/missing | | | 91 | 13.5 |
| Do you know there are treatments to prevent MTCT? | | | | |
| Yes | 165 | 32.9 | 370 | 54.8 |
| No | 330 | 67.1 | 305 | 45.2 |
| If HIV positive, would you accept treatment? | | | | |
| Yes | 467 | 93.2 | 656 | 97.8 |
| No | 26 | 5.9 | 9 | 1.3 |
| Don't know | 8 | 1.6 | 6 | 0.9 |
| Has a health worker ever offered you HIV counselling and testing? | | | | |
| Yes | 151 | 30.1 | 160 | 23.7 |
| No | 350 | 69.9 | 514 | 76.3 |
| Previous HIV test (or tested for HIV) | | | | |
| Yes | 42 | 8.4 | 150 | 22.3 |
| No | 459 | 91.6 | 524 | 77.7 |
| HIV=human immunodeficiency virus; VCT=voluntary counselling and testing; MTCT= | | | | |
| Mother to child transmission; N/A= not asked | | | | |

make testing decisions and rely more on the health system in making these decisions. Alternately, secondary or higher level of education (which may translate into better jobs and economic status) may give these women a sense of independence and control over their health which allows them to play a more active role in their decision to be tested.

In this study, previous testing was found to be inversely associated with acceptance of VCT. A study conducted in the U.S. on the determinants of VCT acceptability found that those who have previously been

tested for HIV are less likely to have a repeat test²³. Those who tested negative usually saw no benefit in repeat testing if they had not taken part in risky behaviours since the last test, or if they found reassurance and comfort in their negative status.²³

The acceptance rate of VCT in the 2003 study was quite high compared to other studies.¹⁵ In a cross-sectional study conducted in several countries in Africa and Thailand, the median VCT acceptance rate for antenatal clinics was 69% (range, 33-95%).¹⁵ The acceptance rate in 2003 indicates that there can be wide uptake of VCT and treatment for HIV in antenatal and maternal and child health programs in this region of Ghana. This could lead to significant reduction of MTCT in this population provided there is wide uptake of ART by the mothers for themselves and their infants. A study on knowledge and attitudes to HIV testing among pregnant women conducted at the Komfo Anokye Teaching Hospital in Kumasi in 2005 reported that knowledge of MTCT among the women was lacking and that a majority of women who had done the HIV test did so as a prerequisite for church blessing of their marriage.²⁵ The study concluded that VCT would be acceptable especially when anonymity is ensured and drug treatment is available for mother and child should the pregnant women test positive for HIV.²⁵

In 2003, approximately 95% of the participants reported willingness to accept HIV testing and over 97% actually accepted testing after receiving counselling. Therefore, counselling seems to be an important precursor to test acceptance by some participants. The high rate of VCT acceptance may be due largely to the fact that the Manhyia clinic is one of the best-established and service-oriented antenatal care facilities in Kumasi, and in large part, to the trusting relationships that exist between the health providers (mostly the midwives) and the women being served. Further, a one-on-one counselling approach using the midwives as counsellors may have facilitated VCT acceptance by the women. A study conducted in Burkina Faso showed that one-on-one counselling for HIV was an important contributing factor to high rate of VCT acceptance.¹² Acceptance rates improved with individual counselling (93.3%), compared to group counselling (89.4%).¹² Through this approach, the women had the opportunity to ask questions that could have been embarrassing in a group setting. The one-on-one counselling sessions may have a distinct advantage for confidentiality and also provide the counsellors with the opportunity to express personal concern for their patients' welfare. However, in resource-poor settings with limited numbers of trained HIV counsellors, a combination of group counselling for general information fol-

lowed by one-on-one counselling for those with more confidential issues could be more feasible.

The offer of treatment to prevent perinatal transmissions, as well as referral to an HIV/AIDS care facility for long-term care, could also have significantly influenced the decision of the women to accept HIV testing in 2003. Although the clinic where our study was conducted did not provide HIV care, the women were told of a HIV/AIDS clinic where they would be referred for long-term care. A study conducted in rural south-west Uganda found that most pregnant women were willing to accept testing if the test would decrease the chances of their unborn child contracting HIV²¹. In the 2003 study, of the 16 women who tested HIV positive, 11 reported prior to testing that they did not know that treatments were available to prevent MTCT of HIV, and 3 stated that they did not believe that there was actually such treatment. Some women also feared the side effects of the treatment. However, once diagnosed, some of the women expressed disbelief when given their positive HIV test result by the counsellor. Therefore, these women harboured doubts about their infection status and about available treatment which may help to explain the discrepancy between acceptance of testing and nevirapine prophylaxis. These results highlight the need for educational programs on the availability and benefits of ART in this and similar communities in Ghana. Educating pregnant women about HIV VCT and treatment in the family planning and antenatal care programs may reduce the women's anxiety about HIV testing and treatment for both themselves and their babies.

Although the 2003 study was small and limited by the cost of the test and trained personnel, the information collected is useful in improving MTCT programs and in guiding health policies regarding VCT and antiretroviral treatment. It showed that providing VCT services for pregnant women in an environment where they feel comfortable and have established a trusting provider-patient relationship can result in high uptake of these services. The less than optimal uptake of VCT in the 2005 study underscores the urgent need for increase in uptake of such services. This is borne out by the study conducted by Addo at the KATH in 2005.²⁵

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