

# Determinants of HIV counselling and testing participation in a Prevention of Mother-to-Child Transmission programme in rural Burkina Faso

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## Summary

**OBJECTIVES** To analyse the factors associated with the uptake of HIV counselling, HIV testing and returning for test results in a rural hospital setting in Nouna, Burkina Faso.

**METHODS** Cross sectional survey of 435 pregnant women who visited the district hospital for antenatal care, from July to December 2004. Separate multivariate logistic regression analyses including analysis of reported reasons were performed to identify the factors associated with accepting HIV counselling and testing.

**RESULTS** HIV testing participation was related to discussing HIV screening with the partner (OR 8.36), and the number of antenatal care (ANC) visits already accomplished (OR 2.23). The quality of pre-test counselling was very poor as 42% did not understand the process. The absence of doctors and mismanagement of time for post-test counselling were the main reasons why women did not receive test results. Analysis of participants by discussion status, counselling and test participation revealed that fewer women dropped out at every stage who discussed HIV testing with their partner.

**CONCLUSION** Communication with the partner plays a vital role in the uptake of HIV testing.

Encouraging women to engage in a discussion about testing with their partners may be a viable intervention to improve participation. Quality of service needs to be better.

**keywords** HIV testing, prevention of mother-to-child transmission, operational, Burkina Faso, pregnant women, discussion

## Introduction

Prevention of Mother-to-Child Transmission (PMTCT) of HIV has become a major focus of HIV control programmes in many sub-Saharan African (SSA) countries (Dabis *et al.* 2000; De Cock *et al.* 2000; Global HIV prevention working group 2003). As a single dose of nevirapine (NVP) to both mother and child is a cost effective way to significantly reduce HIV transmission (Marseille *et al.* 1998, 1999, 2000; Guay *et al.* 1999). NVP-based PMTCT programmes have been scaled up in SSA (Wilfert 2002). HIV testing, the entry point in a PMTCT programme, is crucial to the success of PMTCT services, which furthermore requires the participants to return for their result and accept anti-retroviral therapy (ART). There are two main conceptually different approaches for HIV testing in PMTCT programmes: opt-in and opt-out. With the opt-in approach, testing requires informed consent from the

participant alongside an explicit request for HIV test. With the opt-out approach, HIV testing is routinely included into antenatal care, unless the client explicitly refuses it (Stringer *et al.* 2001; Bassett 2002; De Cock *et al.* 2003).

In Burkina Faso (BF), PMTCT interventions based on the opt-in approach for HIV testing and a single-dose NVP regimen for transmission prevention were started as part of the National Strategy for HIV Control Programme in 2002 (UNAIDS 2004). Programmes offer pre-test counselling in two steps: a group education session to all pregnant women participating in ANC care, followed by voluntary individual counselling. In July 2003, based on the national guidelines for voluntary counselling and testing (VCT) and PMTCT services, a PMTCT programme was launched in the maternity care unit of the Nouna District Hospital in co-operation with the Centre de Recherche en Sante de Nouna (CRSN) and the Tropical Hygiene Institute of University of Heidelberg. The intervention includes the

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above described group education and VCT service, a single dose NVP prophylaxis to HIV-positive mothers and their children, and the treatment of opportunistic infections. All services are free, but NVP is only administered to women who deliver in hospital.

To make sure that the workload of ANC nurses was not affected, the programme recruited a lay female counsellor, who was trained in the national counsellor training programme in Ouagadougou. Additionally, to increase confidentiality and privacy, a separate counselling room was set up, which can be entered without being observed by the other clients.

In the mandatory group consultation, a midwife informs all ANC attendees about the risk of mother-to-child HIV transmission and possibility of participating in the PMTCT programme. Pregnant women can later visit the trained HIV counsellor for pre-test counselling before or after ANC care. Blood samples of those who agree to test are sent to the laboratory at the district hospital for rapid assay screening (Abbott Diagnostics) and confirmed with a second rapid assay (Genie II; Bio Rad). In the end, the counsellor provides the client an appointment date with the doctor (within 7 days of counselling) to receive both the results and post-test counselling. HIV-positive pregnant women who deliver in hospital receive NVP during labor under the supervision of trained midwives.

Although there was a considerable initial optimism over the possible use of NVP in developing countries, the attrition of clients remains a major challenge. Programmes continue to suffer from low counselling uptake, low testing proportions, and participants also often fail to return for results. Furthermore, loss to follow-up is high, as mothers may either not return for delivery or deliver in a health facility which does not offer a PMTCT service (Bajunirwe & Muzoora 2005; Manzi *et al.* 2005). Thus, on average, only about half of the HIV-positive women and around 30% of infants born to HIV-positive mothers complete the programmes successfully (Cartoux *et al.* 1998; Msellati *et al.* 2001; Wilfert 2002; Economic Commission 2004). In BF, a recent study from the capital found that only 18% of pregnant women accepted HIV testing (Pignatelli *et al.* 2006).

Low service uptake made some countries to shift their HIV testing strategy from opt-in to opt-out in order to increase the coverage (Perez *et al.* 2006). Until recently, in Botswana and Malawi the strategy could not substantially improve the proportions of participants returning for their results and accepting ART (CDC 2004; Manzi *et al.* 2005), the ultimate goal of a PMTCT programme.

Social factors such as little education or having a partner with a menial job (Bajunirwe & Muzoora 2005; Painter *et al.* 2005), factors related to childbearing (i.e. bad

obstetric history, multi gravida) (Bajunirwe & Muzoora 2005; Painter *et al.* 2005; Pignatelli *et al.* 2006), as well as negative experiences with medical personnel (Painter *et al.* 2005) and lack of knowledge about rapid tests are associated with lower uptake of PMTCT services (Bajunirwe & Muzoora 2005). Furthermore, partner's consent to HIV testing is an important determinant (MOH/BF 2004; Bajunirwe & Muzoora 2005; Pignatelli *et al.* 2006).

While it remains critically important to understand the factors that influence HIV counselling and testing uptake, few studies are available from rural Africa. We aimed to identify the determinants of HIV counselling and testing uptake in the PMTCT programme at Nouna Hospital, as well as to examine the factors that influence returning for the results.

## Methods

### Study site and design

Nouna District is a rural area of 300 km from the capital Ouagadougou in north-western BF. The district hospital offers maternal and child-health services in a maternity care unit, which is visited by six to 10 pregnant women, mainly from Nouna town, every day.

From July to December 2004, two multi-lingual interviewers (able to speak French and two main local languages), who were selected from another community for the sake of confidentiality and trained to conduct face-to-face interviews, visited the hospital every day, approached all pregnant women coming to the maternity ward, informed them about the study, and asked them to participate. Individual interviews were conducted using semi-structured questionnaires. Women were eligible to participate if they already had an ANC session with their current pregnancy (and thereby had the opportunity to participate in VCT, and could be asked about returning for results). A total of 442 women were approached, of whom seven refused to participate, yielding 435 completed questionnaires. After excluding five questionnaires from women who had earlier been tested outside Nouna Hospital, 430 participants remained for the analyses.

### Statistical analyses

There were several outcomes of interest: (i) participation in individual voluntary counselling, (ii) acceptance of HIV testing and (iii) returning for results. Uni- and bi-variate analysis and, multiple logistic regression were used to investigate associations between the outcomes (i) and (ii) and, possible predictive factors. For both models, the

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factors that were found to be significant in the uni-variate analysis were first included into a full model with all potentially important social co-variables to adjust for confounding. Subsequently, variables with no effect in the adjusted model were removed one-by-one to obtain more robust results (Kleinbaum 2002). Associations were considered significant at  $P < 0.05$ .

Participants' own reasons for not using any part of the service (counselling or testing, or coming back for the result) were obtained by asking open-ended questions such as 'Under which conditions would you have accepted to do individual voluntary screening counselling for HIV?' and 'Under which conditions would you have accepted to do the HIV test?'. The answers were grouped into three main categories: partner-related factors (i.e. partner has not agreed), operational factors (i.e. did not understand the process during ANC/pre-test counselling, afraid of lack of confidentiality, etc.), and personal factors (afraid of testing/blood drawing, does not want to be tested, need more time to make the decision, etc.).

## Results

### Background characteristics of the study participants

A total of 74% of women lived in a monogamous marriage; 16% lived in a polygamous marriage; 10% were either in a relationship or single (Table 1). Only 8% thought that their partner had a casual partner, but an overwhelming majority (94%) reported that they wanted the partner to be tested for HIV. However, 28% reported that they had discussed HIV testing with their partner. Only 36% knew that a healthy-looking person could be carrying the HIV virus, and no participant perceived herself or her partner to be at high-risk from HIV infection (data not shown).

### Participation in voluntary counselling and testing and reported reasons for not taking part in counselling, testing, or not receiving the results

Among the 430 interviewed, 77% agreed to participate in the individual HIV counselling, of whom 73% went on to be tested. Of those who were tested, 71% received their results by the time of interview and 11 did not respond. Therefore only 40% of study participants participated in counselling, testing and received their test result (Figure 1). Non-participation in counselling was mainly related to operational factors: of the 100 women who did not participate in counselling, over 90% reported at least one factor related to operational issues, including all those who reported a partner-related issue (18%) (Table 2). In con-

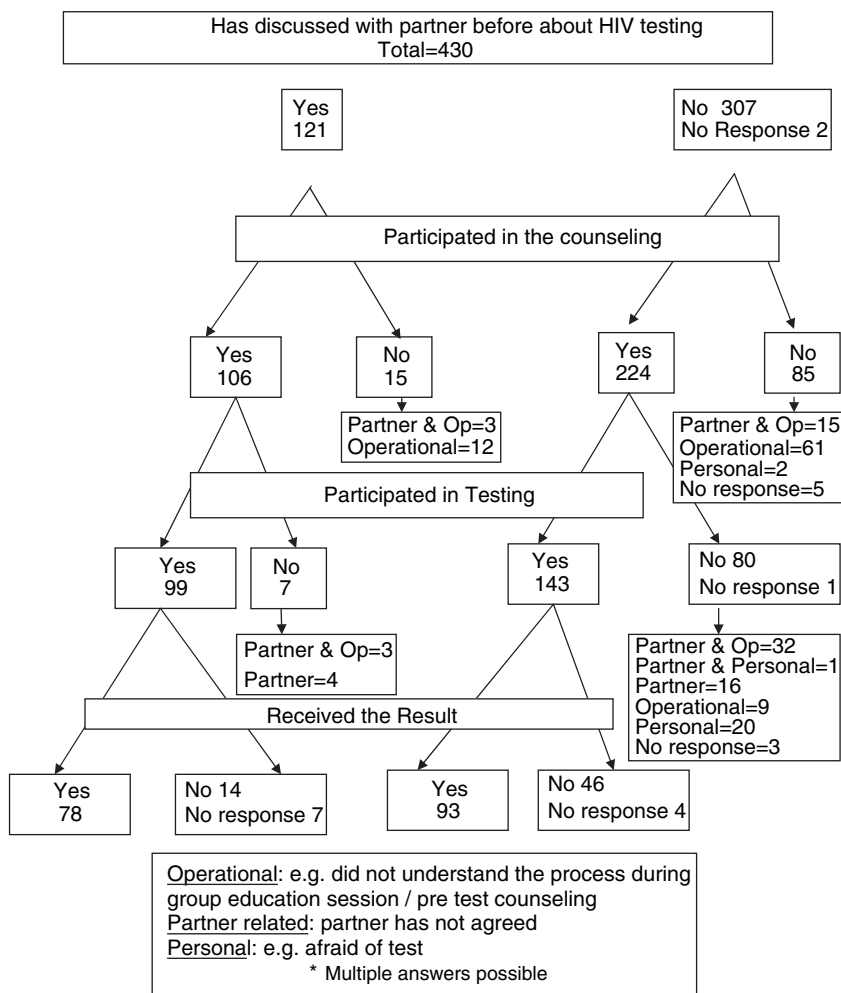
**Table 1** Background characteristics of study participants, Nouna, Burkina Faso, 2004 ( $n = 430$ )\*

Characteristics	<i>n</i> (%)
Age	
15–19 years	93 (21)
20–29 years	227 (53)
30+ years	110 (26)
Marital status	
Single	12 (03)
In a relationship	30 (07)
Monogamous marriage	315 (74)
Polygamous marriage	71 (16)
Religion	
Muslim	292 (68)
Christian	138 (32)
Ethnicity	
Dafing	141 (33)
Samo	88 (20)
Mossi	102 (24)
Bwaba	52 (12)
Peulh	31 (07)
Others	16 (04)
Education/schooling	
None	248 (58)
Koranic	49 (11)
Schooling	133 (31)
Partner's education/schooling	
None	161 (37)
Koranic	92 (21)
Schooling	177 (42)
Partner's profession	
Farmer	257 (60)
Civil servants	37 (08)
Salesman	80 (18)
Others	55 (12)
Women's perception: partner has casual partner	
No	395 (92)
Yes	35 (08)
Discussed HIV screening with partner before	
No	307 (72)
Yes	121 (28)
Wants partner to be tested	
No	19 (06)
Yes	403 (94)
Women's perception: community attitude to HIV-positive women	
Negative/mixed	286 (67)
Positive	144 (33)
Accepted counselling at ANC visit †	
1st visit	255 (78)
More (2nd, 3rd, 4th, or 5th)	70 (22)

\*No response and refused to answer excluded from table.

†Limited to women participated in counselling ( $n = 330$ ).

trast, the disagreement of the partner was prominently mentioned as a factor for non-participation in testing among those who did seek counselling: 56% reported that



**Figure 1** Participation in counselling, testing and returning for result according to discussing HIV screening with partner.

they could not participate because their partner did not agree (for 20 participants this was the only barrier), while 44% mentioned an operational factor (Figure 1).

Among the 242 women who were tested, 60 reported at the time they were interviewed that they had not yet received their result, with 85% mentioning an operational factor, while only seven women reported that their partner had not agreed to it (Table 2). Eighty-seven per cent either had shared the results or had the intention to tell the result to their partner, friend or family member. While only 9% did not tell anybody, 85% had already told or would disclose the result to their partner (Table 4).

**Model 1: Determinants of individual HIV counselling uptake**

Basic demographic characteristics, such as ethnicity, or HIV-related factors, such as HIV risk perception (moderate

or low-risk *vs.* no risk), or the knowledge that a healthy looking person can carry the virus, were not associated with an acceptance of counselling (data not shown). In bi-variate analysis, women who were in a relationship, had a husband with primary or secondary education, a salesman as partner, discussed HIV screening with the partner before, wanted the partner to be tested, or had the perception that the community would have a positive attitude (*vs.* negative or mixed) towards HIV-positive women were significantly more likely to participate in HIV counselling.

In multivariate analysis (Table 3), wanting the partner to be tested (OR 4.13), discussing HIV screening with the partner beforehand (OR 2.33), having a salesman partner (OR 3.0), and the perception that the community would have a positive attitude (*vs.* negative or mixed) (OR 1.85) towards HIV-positive women were significantly positively associated with participation in the HIV counselling, while

**Table 2** Reasons for refusal to counselling, testing and not receiving test result (multiple answers are possible)

Refused participation in counselling (100)	<i>n</i> (%)
Partner-related reasons	
Partner has not agreed	18 (18)
Operational reasons	
Did not understand the process during group education session	85 (85)
Afraid of lack of confidentiality	9 (9)
Had to wait for long time	5 (5)
Did not like the counselling process	3 (3)
Did not like the counsellor	1 (1)
Personal reasons	
Afraid of test	2 (2)
Refused participation in testing (87)	
Partner-related reasons	
Partner has not agreed	56 (64)
Operational reasons	
Did not understand the process during counselling	37 (42)
Afraid of lack of confidentiality	7 (8)
Had to wait for long time	1 (1)
Personal reasons	
Afraid of injection	7 (8)
Do not want to be tested	7 (8)
Afraid of test	3 (3)
Need more time to make the decision	3 (3)
Has good health	1 (1)
Did not receive the result (60)	
Partner-related reasons	
Partner has not agreed	7 (12)
Operational reasons	
Had to wait for long time	11 (18)
Did not get the appointment with doctor	25 (42)
Date for post-test counselling has not arrived yet	12 (20)
Did not like the counsellor	3 (5)
Personal reasons	
Was sick	2 (3)

women who attended Koranic school (OR 0.41) were less likely to participate.

### Model 2: Determinants of HIV testing

In bi-variate analysis, only discussing HIV screening with the partner before and wanting the partner to be tested were significantly associated with the uptake of HIV testing (Table 3). In the multivariate model, as shown on the right side of Table 3, three factors showed a significant (positive) association with undergoing HIV testing: discussing HIV screening with the partner before (OR 8.36), wanting the partner tested (OR 8.10), and the number of ANC visits prior to testing (OR 2.23).

### Social dynamics of HIV testing

Among those who reported that they had discussed HIV testing with their partner (121), 82% tested eventually (Figure 1). In contrast, among those who had not discussed testing (307), only 47% tested in the end. Interestingly, among those who had not discussed HIV screening with their partners and did not participate in HIV testing after counselling, 61% reported at least a partner-related reason for not taking part in testing (Figure 1).

Those who tested were also asked whether they had told anyone about going for testing before they went to the hospital. Sixty-two per cent of testing participants told their partner that they would go for testing, while 33% did not tell anyone (Table 4). Only 19 (8%) participants reported that others (mainly a friend, parents or another family member ( $n = 14$ ), but rarely the partner ( $n = 5$ ) tried to deter them from testing (data not shown). Finally, 85% of those who tested reported that they had or would share the result with their partner (Table 4).

### Discussion

In our study, the overall acceptance of HIV testing after voluntary individual counselling was 73%, which is similar to other settings with an opt-in strategy (Kilewo *et al.* 2001; Stringer *et al.* 2003) and also to the proportions reported from other, mostly urban African settings (Kiarie *et al.* 2000; Temmerman *et al.* 2003; Ekouevi *et al.* 2004; Perez *et al.* 2004; Dinh *et al.* 2005). However, over all acceptance of HIV testing was only 40%. We found that the participant's social background, operational factors, and influences from participants' partners' were complexly affecting the service utilization.

Among social factors (which were associated with counselling participation only), the uptake of counselling was associated with having a salesman partner, but not with the partner's educational background. Given that similar findings were also reported from elsewhere in Africa (Kowalczyk *et al.* 2002), the partner's profession may be a better proxy measure of social status than is education in some African settings. Also, women with Koranic school education were less likely to participate in counselling, which was also reported from the Ivory Coast (Painter *et al.* 2005), which is closely related to BF through migration. The perception of positive community attitudes towards HIV-positive women may indicate that some fear of stigmatization may be present, a factor that was often found to be an important barrier (Kilewo *et al.* 2001; Maman *et al.* 2001; de Paoli *et al.* 2004; Campbell *et al.* 2005).

M. Sarker *et al.* **Determinants of HIV counselling****Table 3** Multivariate analysis of factors associated with participation in HIV counselling and testing in PMTCT programme

Variables	Determinants of counselling		Determinants of testing	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age				
15-19 years	1.00	1.00	1.00	1.00
20-29 years	1.06 (0.60, 1.85)	0.85 (0.44, 1.63)	0.65 (0.33, 1.27)	0.62 (0.29, 1.33)
30+ years	0.96 (0.50, 1.81)	0.87 (0.41, 1.82)	0.57 (0.27, 1.20)	0.48 (0.20, 1.16)
Religion				
Muslim	1.00	Not included	1.00	Not included
Christian	1.04 (0.65, 1.67)		1.02 (0.60, 1.72)	
Marital status				
Monogamous marriage	1.00	1.00	1.00	1.00
Polygamous marriage	1.40 (0.74, 2.65)	1.98 (0.96, 4.07)	0.66 (0.35, 1.22)	0.77 (0.39, 1.54)
In a relationship	4.82 (1.12, 20.7)*	3.56 (0.77, 16.4)	1.01 (0.41, 2.50)	0.74 (0.27, 2.13)
Single	0.60 (0.17, 2.18)	0.60 (0.17, 2.17)	1.68 (0.19, 14.71)	2.17 (0.20, 22.9)
Formal education/schooling				
No schooling	1.00	1.00	1.00	1.00
Koranic school	0.72 (0.37, 1.39)	0.41 (0.18, 0.93)*	0.85 (0.39, 1.86)	0.50 (0.20, 1.24)
Primary & secondary schooling	1.47 (0.87, 2.47)	0.70 (0.38, 1.29)	1.59 (0.90, 2.79)	0.98 (0.50, 1.91)
Formal education/schooling husband				
No schooling	1.00	1.00	1.00	Not included
Koranic school	1.14 (0.64, 2.02)	1.09 (0.54, 2.17)	1.00 (0.52, 1.92)	
Primary & secondary schooling	1.64 (0.99, 2.7)*	1.11 (0.61, 2.00)	1.61 (0.92, 2.82)	
Woman's perception: partner has casual partner				
No	1.00	1.00	1.00	Not included
Yes	2.00 (0.76, 5.29)	1.82 (0.66, 5.02)	1.20 (0.50, 2.90)	
Partner's profession				
Farmer	1.00	1.00	1.00	Not included
Salesman	2.91 (1.4, 5.9)**	3.00 (1.3, 6.6)**	0.95 (0.52, 1.75)	
Others	1.71 (0.95, 3.05)	1.62 (0.83, 3.17)	1.36 (0.71, 2.57)	
Discussed HIV screening with partner before				
No	1.00	1.00	1.00	1.00
Yes	2.54 (1.4, 4.5)***	2.33 (1.2, 4.4)**	7.91 (3.5, 17)***	8.36 (3.6, 19)***
Wants partner to be tested				
No	1.00	1.00	1.00	1.00
Yes	5.27 (2.1, 13)***	4.13 (1.4, 11)**	7.37 (1.4, 38.7)**	8.10 (1.27, 51.7)*
Women's perception: community attitude to HIV-positive women				
Negative/mixed	1.00	1.00	1.00	Not included
Positive	1.80 (1.09, 2.98)*	1.85 (1.07, 3.2)*	1.03 (0.62, 1.72)	
Accepted counselling at ANC visit				
1st visit	Not applicable		1.00	1.00
More (2nd, 3rd, 4th, or 5th)			1.79 (0.93, 3.47)	2.23 (1.08, 4.59)*

Significant at \* $P \leq 0.05$ , \*\* $P \leq 0.01$ , \*\*\* $P \leq 0.001$ .

Potentially modifiable factors, such as operational problems and partner approval of using services were very important determinants of both counselling and testing participation. However, the two factors had a markedly different role at the various stages of the programme procedure. For counselling, the better explanation of the testing process may improve the uptake of voluntary counselling, particularly as only a few study participants reported that their partner would be opposed to this.

Among those who counselled but refused testing, most participants reported that their partner did not agree (64%), but a large proportion (42%) also indicated that they did not understand the testing procedure during counselling. Operational improvements here appear to be important as well, but may well be insufficient without facilitating discussions with the partner or increasing the partner's involvement. For not receiving the result, operational factors made up the majority of reported reasons

**Table 4** Role of HIV testing discussion with partner before participation on disclosure of willingness to test and test result

Discussed screening with partner	Nobody <i>n</i> (%)	To the partner <i>n</i> (%)	Not to partner but to family or friends <i>n</i> (%)	No response <i>n</i> (%)
Told about going for HIV testing before coming to the hospital				
Yes (99)	30 (31)	67 (68)	2 (2)	0
No (143)	49 (34)	82 (57)	9 (7)	3 (2)
Total (242)	79 (33)	149 (62)	11 (4)	3 (1)
Already told or will tell the result of the HIV test*				
Yes (99)	4 (4)	92 (92)	1 (1)	2 (2)
No (143)	17 (12)	114 (80)	4 (3)	8 (5)
Total (242)	21 (9)	206 (85)	5 (2)	10 (4)

\*Those who have not received the result yet and reported the intention to tell the result to somebody.

for failure, which were likely to be facilitated by poor management of scheduling of the post-test counselling sessions and the occasional absence of the doctor (M. Sarker, Personal communication).

The importance of the partner's agreement, the lack of which was found to be a major reason for the low-uptake of PMTCT service in SSA (Economic Commission, 2004), particularly for rural women (Bajunirwe & Muzoora 2005) was confirmed for our setting by two findings. First, the proportions of patients lost at any point in the VCT process were much smaller among those who discussed HIV testing with their partner than among those who did not. Furthermore, the majority of non-testers also mentioned the disagreement of the partner as a reason for not participating in testing (Table 2).

Our results indicate that discussing HIV testing with the partner may be crucial for obtaining the partner's permission for testing. As mentioned above, drop-out among those who have discussed HIV testing was very low. The majority of those who mentioned partner-related barriers as a reason for not participating in counselling or testing also reported that they did not discuss VCT with their partner (Figure 1). These two findings imply that participants may often have a negative perception of the partner's attitude about testing, which may be modified by an actual discussion on HIV testing.

In conclusion, service uptake may be improved by increasing the understandability of the two pre-test counselling sessions, as well as by helping women attend more than one ANC session. For all settings with an opt-in approach, HIV pre-test counselling plays a pivotal role as a gateway to the PMTCT programme. Same-day results, individual pre- and post-test counselling by the same counsellor including intensive follow-up and quality assurance provided by the supervisory staff are promising ways to achieve high-uptake of HIV testing (Welty *et al.* 2005). PMTCT programmes certainly provide a benefit to the participants by reducing the chance of transmitting

HIV to the baby. Nevertheless, both personal and operational factors are needed to be addressed to increase the PMTCT coverage in developing countries.

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