

ADDIS ABABA UNIVERSITY  
GRADUTATE STUDIES PROGRAM

IMPROVING PARTNER HIV TESTING AMONG ANC  
ATTENDANCES AT KOREM HEALTH CENTER, KOREM,  
SOUTHERN TIGRAY REGION, ETHIOPIA

BY

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Advisors

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2. Jeph Herrin, Yale university (PhD)

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## Abbreviation

<b>ANC</b>	Antenatal Care
<b>PMTCT</b>	Prevention Mother to Child Transmission
<b>HIV</b>	Human Immune Virus
<b>ART</b>	Anti-retro Viral Therapy
<b>EPI</b>	Expanded Program Immunization
<b>OPD</b>	Outpatient Department
<b>CI</b>	Confidence Interval
<b>HIT</b>	Health Information Technology

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## Abstract

**Introduction:** Male partner involvement in antenatal voluntary HIV counseling and testing (VCT) has been shown to increase uptake of interventions to reduce the risk of HIV transmission in resource-limited settings. We aimed to identify methods for increasing male involvement in antenatal VCT and determine male correlates of accepting couple counseling and how to improve these 4% of partner HIV testing.

**Methodology:** We invited women presenting to Korem health center in antenatal clinic to return with their male partners for individual or couples VCT. Male attitudes towards VCT and correlates of accompanying female partners to antenatal clinic and receiving couple counseling were determined.

**Results:** Of a total 225 ANC client the response rate was 95% (214), 87% (n=96), and 85% (n=191) the respondent rate were married, Tigray and orthodox followers respectively. The majority (58%) aged 19-44 years old. From the total 214 ANC clients, 145(67.8%) ANC clients brought their male partner, of which 140 (96.6%) were tested as couple while the rest 5 declined to test. Sixty nine (32.2%) of the 214 ANC clients did not want to bring their male partner when invitation letter was sent. HIV prevalence among the tested couples in this study was 3.5%.

**Conclusions:** Formulated invitation card, increasing awareness of male partner for HIV counseling and testing, and offering men at antenatal clinic with options for couple and individual counseling could increase partner HIV testing and counseling in ANC significantly, from 4% to 65.4%, at Korem health center. It was found to be an important opportunity and acceptable strategy for increasing male involvement in PMTCT and promoting male HIV testing with low cost and feasible intervention. All health center management team and board members should be committed to pursue this strategy in order to sustain it as a system. The use of weekends, in addition to the weekdays, could make the service more accessible for large proportion of “busy” clients. Future studies could benefit from such designs.

# **1. Introduction**

## **1.1 Organizational Description**

It was conducted at Korem health center ANC clinic which is located in Southern Tigray, North Ethiopia 620 kms away from Addis Ababa and 160kms towards the capital of the region, Mekelle. The health center serves as primary hospital and it provides all health related service to people living in the town and 3 rural kebeles nearby health center. ANC clinic was one of the well established clinics and running in good shape (organized). Women living in Korem and catchment area get ANC, delivery, PNC and PMTCT services. The ANC clinic is currently run with the help of 1 health officer, 3 midwives, 2 clinical nurses and other health professionals.

## **1.2 Problem Statement**

There was low partner HIV testing and counseling in ANC clinic at Korem health center. Only 4% of women coming to Korem health Center ANC clinic brought their partner for HIV testing and counseling. Many countries in sub Saharan Africa have challenges and facing partner HIV testing problem. This is particularly important for those women who are pregnant. Even if maternal health care and PMTCT is uniformly organized and free of charge, many women are not willing to convince their male partner to get tested, among the reason that contributes because of men's are over loaded with other work, pregnancy related service are considered as task of pregnant women only, men's were not willing to go with women's, low awareness, loss of economic support. This holds true in our health center, so we aimed to increase male involvement in antenatal voluntary counseling and testing and determine male correlates of accepting couple counseling in these setting.

## 1.3 Objectives

### General Objectives

- To improve the uptake of HIV testing by male partners of women's attending antenatal clinic at Korem health center.

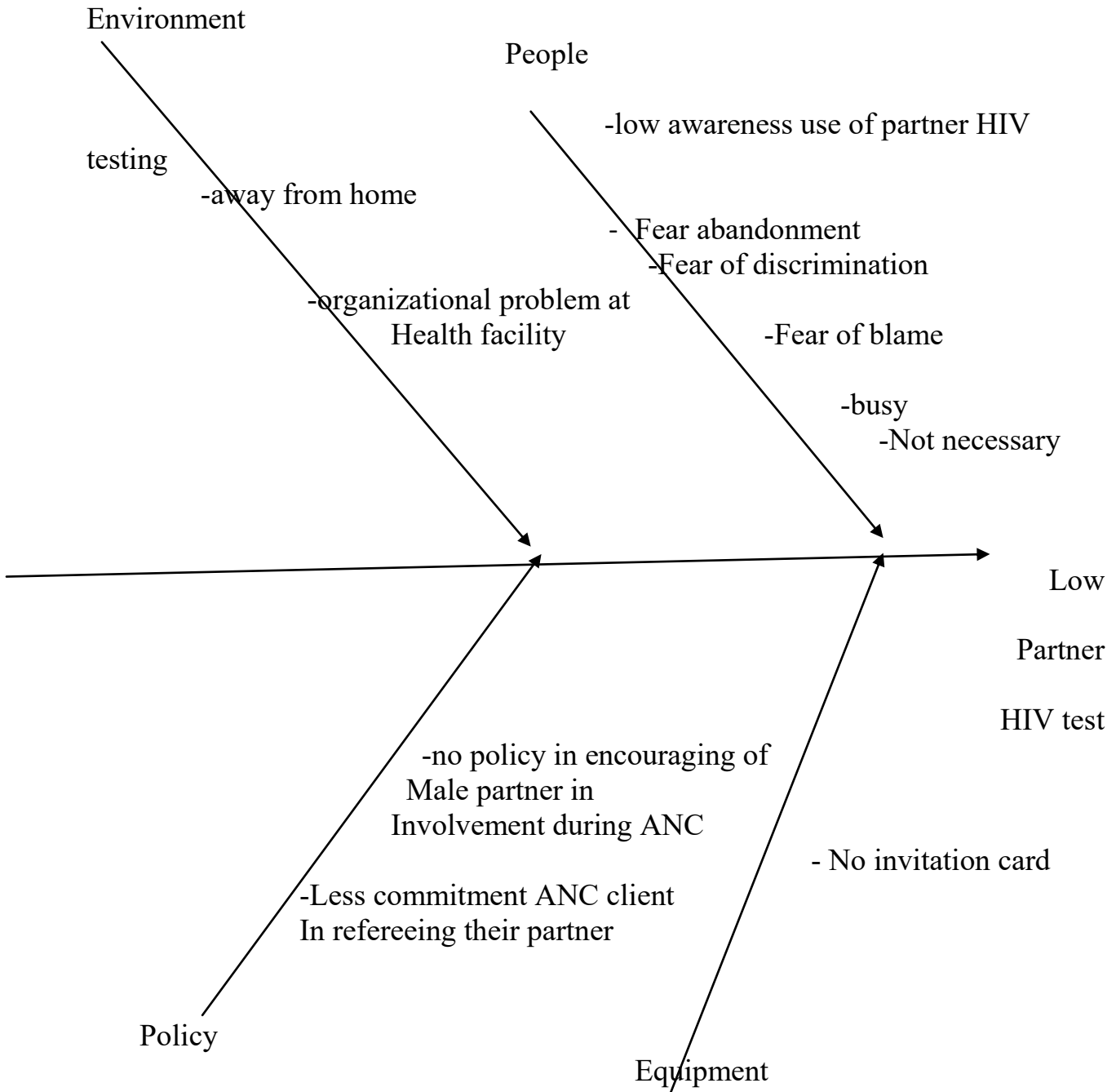
### Specific objectives

- To improve partner HIV testing from known 4% to 59.6%
- To describe intention to disclose HIV test result and factor determine antenatal women's disclosure to partner
- To determine proportion of male partner that access and accept HIV testing and its barriers.
- To make comparison between couples who access and accept couple HIV counseling and testing and those who do not.

## 1.4 Root Cause Analysis

Data collection was made for potential causes. Focused group discussion was done to identify the potential root causes. Three FGDs were conducted for the same group of people before the intervention to identify and analyze the root causes. The group comprised of: 1 Health Center Director, 3 Midwives, 2 Health Officers, 1 Adherence Supporter, and 1 Case manager. They were selected purposely because of their job description in relation to counseling and testing guidance work. The principal investigator moderated the FGD while taking the notes. The aforementioned people were brainstormed to forward what they suspect to be the possible root causes for the problem. Finally, their idea was made to fit the fishbone diagram as follows.

**Fish bone diagram**



## Evidence

1. Far distance : Of cores 3 rural kebeles in the catchment area have difficult geographical location but most of the targeted population >70% are living near by the health center, but there were only 4% client offer and test their partner to HIV, so this is not the real root cause.
2. Organizational problem at health center: even if the organization setup is not convenient for client but if the client reaches to health center no one returns back without getting the service, so this is not the real cause.
3. Low awareness use of partner HIV testing: most women coming to health center have no idea about the importance of partner HIV testing during ANC.
  - ✓ 12 women were asked to offer their partner to test, in January 2013.2 women said they were tested before marriage, so if once they were tested what are its advantages they said. And five women said, even if they know its benefit of testing but they fear negative response from their partner. And four women said they have no idea about the importance of partner HIV testing during ANC. And one woman was offended with no clear reason. So it was real cause.
4. Fear of abandonment: majority of women asked in pilot study (2 of them) had fear of it but it was no significant.
5. Work load: even if many women served in ANC clinic, client nurse ratio is 1:4 per day, so it is not the real cause.
6. No policy encouraging of male involvement during ANC: even if the policy includes in PMTCT manual but many hospitals and health centers are not practice, so this is not real cause.
7. Less commitment ANC client in referring their partner: most women response in pilot study by different reason such as Fear of relationship and conflict in case of HIV positive result, fear of blame and fear of discrimination. They were less committed to offer their partner to test. So it was real cause.

8. No invitation card: Many hospitals and health centers in Africa were effective but our health center was shortage of invitation card. So, it was real cause.

### **Selection of the most feasible root causes for intervention**

According to the evidence given, 3 causes were found to be the real root cause among 8 potential root cause listed by participants.

1. Low awareness of ANC client use partner HIV testing.
2. No invitation card in ANC clinic.
3. Less commitment of ANC client in referring their partner

## **1.5 Literature review**

Partner HIV testing is an important issue in quality life and to get healthy new borne; there are a number of studies across the global [6]. The study conducted at Kenyatta national hospital, Nairobi. Of the 262 ANC clients enrolled, 250(95%) participate in study, 137 ANC clients brought male partners, 132 were tested as a couple. 5 male partner refused HIV test, 3 (60%) need more time and 2(40%) were afraid of positive result. HIV prevalence among male partners was 5.3%, 10(8.8%) of 113 unaccompanied ANC clients were HIV positive and HIV prevalence among ANC mother was 6% [10]

A study conducted in PMTCT program within the ditrame plus PMTCT project in Abidjan followed up for two years after delivery showed 546 HIV positive and 393 HIV negative women during pregnancy. Circumstance, frequency, and determinants of disclosure and offered to test male partner were estimated according to HIV status. The determinants of disclosure and offer partner to test of HIV were identified according to women's HIV status, during two years follow up, disclosure to male partner was reported by 96.7% of HIV negative women's compared to 46.2% of HIV positive women's ( $\chi^2 = 265.2$  degrees of freedom(df)=1,  $p < 0.001$ ). Among HIV infected women, privileged circumstances for disclosure were just before delivery, during early weaning (at 4month to prevent HIV postnatal transmission), or up on resumption of sexual activities, formula feeding by HIV infected women increased the probability of disclosure and offer partner HIV to test and counseling (adjusted odds ratio 1.54,95% confidence interval 1.04 –

2.27, Wald test =4.649 df =1 p=0.0031), whereas house hold factors such as having a co spouse or living with family reduce the probability of disclosure and offer partner HIV to test [11].

Another study conducted in Nairobi, Kenya in 2012 demonstrated that HIV-infected women with male partner involvement had a significantly lower risk of HIV infection and greater HIV free survival compared to infants born to women without male involvement and have demonstrated enhanced utilization of PMTCT services with partner involvement. The finding of a more than 40% reduction in both the risk of vertical transmission and the composite risk of infant HIV infection or mortality provides key new evidence that male involvement may represent an under-utilized public health intervention [12]

A Study conducted in Cameroon identified barriers to male PMTCT involvement rooted mainly at the level of the society, the health system and the individual. The most pertinent was the societal perception of antenatal care and PMTCT as a woman's activity, and it was unacceptable for men to be involved. Health system factors such as long waiting times at the antenatal care clinic and the male unfriendliness of PMTCT services were also identified. The lack of communication within the couple, the reluctance of men to learn their HIV status, the misconception by men that their spouse's HIV status was a proxy of theirs, and the unwillingness of women to get their partners involved due to fear of domestic violence, stigmatization or divorce were among the individual factors [13].

A Study conducted antenatal clinic at Mbale Regional Referral Hospital, Mbale District, eastern Uganda to evaluate the effect of a written invitation letter to the spouses of new antenatal clinic attendees on attendance by couples and on male partner acceptance of HIV testing at subsequent antenatal clinic visits showed low individual counseling [14].

A Study was conducted in Nairobi antenatal clinic to return with their male partners for individual or couples VCT. Of 1,993 women who invited their partner, around 16%) returned with their partners to ANC. Men attending antenatal clinic were married (>99%), employed (98%), and unlikely to report prior HIV testing (14%), wanting an HIV test (87%) or health information (11%) were the most commonly cited reasons for attending. Most (95%) men who came to antenatal clinic accepted HIV testing and 39% elected to receive counseling as a couple.

Men who received counseling with partners were younger, had fewer children, and were less knowledgeable about prevention of mother-to-child HIV transmission (PMTCT) than those who received counseling individually ( $p < 0.05$ ). Only 27% of men stated they would prefer HIV testing at a site other than the ANC [15].

A randomized-controlled trial to improve male HIV testing was conducted in the Democratic Republic of Congo on 2706 pregnant women whose partners were invited to VCT according to a random schedule varying location (bars, churches and health centers). Only 591 (22%) attended – 99.6% of whom had an HIV test – but were significantly more likely to do so at bars than at healthcare centers. Furthermore, couple counseling uptake was greater at bar and church venues than at healthcare centers [17].

Study from Kigali and Lusaka reported weekend test to be feasible, and couple counseling was associated with lower loss to follow-up but had no effect on nevirapine use utilized weekend testing to monitor the effects of couple testing compared to women testing alone [18].

Male involvement was associated with a number of positive short- and long-term pregnancy and relationship outcomes in Kenya. A significant positive relationship was found between male attendance and reduction of HIV acquisition and infant mortality [19].

Infant of HIV infected women with male partner involvement had significantly lower risk of HIV infection and greater HIV free survival compared to infants born to women without male involvement.

## **2. Methods**

### **2.1 Study Design**

Health facility-based pre and post intervention was conducted among 225 attendees at the antenatal clinic in Korem health center from May 2013 to September 2013. Routine HIV counseling and testing were carried out according to the Ethiopian Ministry of Health guidelines (2006)[4].

### **2.2 Study Area**

It was conducted at Korem health center ANC clinic which is located in Southern Tigray, 620 kms away from Addis Ababa and 160kms towards the capital of the region, Mekelle. The health center serves as primary hospital and it provides all health related service to people living in the town and 3 rural kebeles nearby health center. ANC clinic is one of the well established clinics and running in good shape (organized), women living in Korem and catchment area get ANC, delivery, PNC and PMTCT services. The ANC clinic is currently run with the help of 1 health officer, 3 midwives, 2 clinical nurses and other health professionals. In the previous two to three years the problem was feasible not exciding 4% women offering their partner. And the average daily women attending in ANC clinic was 6.

### **2.3 Source population**

All women visiting ANC clinic to receive PMTCT services at Korem health center were the source population of this study.

### **2.4 Study population**

Study population includes all women visiting ANC clinic for receiving PMTCT services at Korem health center during the specified period.

### **2.5 Sample Size and sampling technique**

Single population proportion formula was employed to determine a total sample size of 236 PMTCT women during the three months period.

$$n = \frac{(z_{1-\alpha/2})^2 p(1-p)}{d^2}$$

The assumptions were:

Z ( $\alpha/2$ ) = standard score value of 1.96 at 95% confidence interval.

P= an annual baseline proportion of 4% couple testing,

d= considering a national proportion of 21% couple testing (d=0.025)

All women coming in health center from may-Sep/2013, pre-post intervention was done consecutively.

## 2.6 Sampling procedure

Possible proportion of partner HIV testing, from pre intervention 4%, I wanted to improve male partner HIV testing from 4% to 35%, even if national proportion was 21% by assumption health extension worker I proposed to raise to 35%

## 2.7 Data Collection procedures

A client flow questioners comprised of socio demographic variable including the client age, new, repeat, collection date, HIV status, reason for the visit, and awareness about PMTCT. A data collection procedure was using the above tool, in order to ensure the quality of data collection. For these project 4 data collectors who have experienced on participation of data collection and one supervisor who was diploma on HIT (health information technology) was participated. Before the data collection one day training was given for both data collector and supervisor, on the objective of the assessment, ethical issues while dealing respondents, techniques of supervision and how to use the data collections instruments was discussed.

## 2.8 Data processing

Data was entered into EPI info Version 6. It was also cleaned for accuracy and consistency prior to analysis. Finally, it was recorded into appropriate variable type for analysis.

## 2.9 Data analysis Procedure

Data had been clear up manually, finding was presented by tables and figures,  $\chi^2$ -test was applied for presence of significance associations between the intervention and change.

We had compare partner testing between two groups before and after intervention, Group one was how many women's offer their partner to test by the pre-interventions Sample and second group was post – intervention group, so their average partner testing was be compared.

## 2.10 Data quality management

The questionnaires and client flow forms was checked for completeness and accuracy first by data collector's and then by supervisors, and there were double entry.

The capstone project assistants were knowledgeable in the local language and interview techniques, and had been trained in terms of the trial objectives and methods.

The structured interview covered topics concerning the participant's education, occupation, religion, and ethnic group, number of pregnancies, household assets, opinions and experiences relating to routine HIV counseling and HIV testing in the antenatal clinic. Furthermore, her partner's age, occupation and education was discussed. Participants were asked about partner clinic attendance and partner antenatal HIV testing acceptance.

## 2.11 Inclusion criteria

Eligible participants were women's attending in ANC clinic, who agreed to attend subsequent antenatal next visit(s) follow-up period at Korem Health center, and were willing to give the invitation card to their male partners. A male partner was defined as the male who impregnated the antenatal attendee in the current pregnancy.

Women attending without spouses at the antenatal visit were identified at reception in the antenatal clinic. They were tracked until they had undergone all the standard clinic procedures (namely registration, health education, pre- and post-test counseling for HIV, HIV testing, obstetric examination and treatment). Individuals were approached by capstone project assistants

and informed about the objective and the intervention. Those who agreed to participate in the providing written consent were enrolled into an enrolment form with a randomly generated identification number.

Each woman was provided with an invitation card addressed to her spouse and given an appointment for a return next visit. If the participant was not able to attend with her partner on the scheduled visit, she was given another appointment for a return next visit. Their identification numbers were marked on their antenatal cards to aid follow up at the next clinic visit. The importance of adhering to their ANC visits was uniformly emphasized. Women who did not return to the antenatal clinic for their scheduled visits during the follow-up period were classified as "lost to follow up".

### **2.12 Exclusion criteria**

The exclusion criteria included women who attended at the antenatal visit. Did not consent to participate in the trial, or had spouses who were inaccessible.

### **2.13 Ethical issue**

Ethical clearance were obtained from Addis Ababa University, college of medicine and health science, school of public health, health service management unit letters were written all concerned bodies from health center and board management. Respondent were briefed about the confidentiality of their responses and importance of providing important information. Informed consent was obtained from all study participants prior to interview health and health education was given.

### 3. Intervention

Alternative strategies for how to improve the current partner HIV testing

1. Peer sensitizations of men
2. More male friendly
3. Train health workers to meet men's need
4. Hold discussion between health extension workers and community members
5. Increase awareness of ANC client for partner referral to counseling and HIV testing
6. Giving invitation card to partner in ANC clinic

#### 3.1 Best Strategies Increase up Take of male Partner HIV Testing

1. Increase awareness of ANC client for partner referral to counseling and HIV testing
2. Giving invitation letter to partner

Detailed in the invitation card was the following information: the appointment date of the woman's next antenatal visit; that the antenatal and PMTCT services are free (no user charges); that these services are beneficial to the couple and their unborn baby, and that their utilization by men is low; that he was cordially invited to accompany the woman at her next scheduled antenatal visit to discuss important issues concerning her antenatal care; and that the time spent in health center would be minimal. So, when partner came to health center increase awareness about HIV testing and counseling in ANC clinic.

## 4. Result

A total of 236 women clients of PMTCT were intended to be included into the study. A total of 225 were enrolled into the study during the 3 months study period, and of which 9 turned with their spouse/partner during the first visit and 214 were came alone (without their partners“ accompany) for PMTCT and participated in the study after post-intervention. Eleven ANC clients were either martially single or did not have partner.

Table 1: Socio demographic and economic characteristic of study proportion at Korem health center in ANC clinic pre-intervention in Korem Health Center, Korem, Tigray, from April to June 2013

	ANC clients (n=225)	Partner (n=9)
<b>Median(age)</b>	27.5(19-44)	32(21-57)
<b>Marital status</b>		
Single	11(4.8%)	0
Married	214(95.2%)	9(100%)
<b>With co-wives/others</b>		
Yes	5(2.3%)	1(11%)
<b>Educational level</b>		
Primary	136(61%)	5(56%)
Secondary	68(30%)	2(22%)
university/Collage	21(9%)	2(22%)
<b>Religion</b>		
Muslim	34(15%)	1(11%)
Christian	191(85%)	8(89%)
<b>Ethnic group</b>		
Tigray	196(87%)	9(100%)
Non-Tigray*	29(13%)	0
<b>Earning per month</b>		
< 500	14(6%)	0(0%)
500-1000	6(3%)	1(11%)
1000-2000	7(3%)	1(11%)
> 2000	3(1%)	0(0%)
Not earning**	195(87%)	7(78%)
<b>Have you ever test before</b>		
Yes	89(40%)	2(22%)
No	136 (60%)	7(78%)

\*includes Amhara and Agewu ethnicity; \*\*Not earning are those who do not have regular earning and mostly farmers

The median age (Range) of ANC clients was 27.5 (19-44) where as that of the partners was 32 (21-57). Majority of the ANC clients were characterized by married (95.2%), Christian (85%); Tigray (87%); and primary educated (61%); and 40% had a history of ever testing before during the pre-intervention period and before current testing (Table 1 above).

One hundred forty five (67.8%) ANC clients brought their male partners, of which 140(96.6%) were tested as a couple. Of those male partners who brought by their female partner/spouse, 5 of them refused to take the HIV test with various reason (i.e., 3 of them needed more time while 2 of them were afraid of positive result). Sixty nine (32.2%) ANC clients did not want to bring their male partners to ANC clinic for couple testing; of which 8(11.5%) of them were turned HIV positive status.

HIV prevalence among the couples was 3.5%. Couple HIV prevalence was defined as proportion of HIV positive result couples (i.e., concordant or discordant) among those couples who got HIV testing and counseling as a couple (Table 2 below).

Table 2: Couple HIV counseling and testing results at Korem health center in ANC clinic pre-intervention in Korem Health Center, Korem, Tigray, from July to Sept 2013

<b>Couple HIV testing</b> (n=140)	<b>Test Result</b>	<b>N</b>	<b>%</b>
<b>Concordant couples</b> (n= 136)	Positive	2	1.5%
	Negative	134	98.5%
<b>Discordant couples</b> (n= 4)	Male positive	3	75%
	Female positive	1	25%

Among 214 women who came for ANC visits, 69 (32.2%) did not bring their partner for couple counseling and testing. Of those ANC clients who did not bring their partner, and 145(67.7%) ANC client brought their partner, 7(10.1%) of the ANC women have HIV positive status and did not want to disclose their status to their male partner. HIV status of the male partner, of the 69 ANC women who did not bring their partner, was not known if it is concordant or discordant with their spouse HIV status (See Table 3, below).

Table 3: Socio demographic and economic characteristic of study proportion after post-intervention in Korem Health Center, Korem, Tigray, from July to Sept. 2013

	ANC clients (n= 214)	Partners brought to ANC clinic (n=145)
<b>Median Age (Range)</b>	27.5(19-44)	32(21-57)
<b>Marital status</b>		
Single	11(5%)	0
Married	203(95%)	145(100%)
<b>With co-wives/others</b>		
Yes	5(2.3%)	0(0%)
<b>Educational level</b>		
No or Incomplete Primary	128(60%)	50(35%)
Secondary	65(30%)	64(44%)
University/Collage	21(10%)	31(21%)
<b>Religion</b>		
Muslim	30(14%)	21(15%)
Christian	184(86%)	124(85%)
<b>Ethnic group</b>		
Tigray	188(88%)	122(84%)
Non-Tigray*	26(12%)	23(16%)
<b>Earning per month</b>		
< 500	8(7.6%)	5(3.5%)
500-1000	5(21.2%)	33(23%)
1000-2000	5(20.4%)	51(35%)
> 2000	3(13.6%)	18(12.5%)
Not earning	193(37.2%)	38(26%)
<b>Have you ever test for HIV before</b>		
Yes	187(87%)	21(14%)
No	27(13%)	124(86%)

\*includes Amhara and Agewu ethnicity

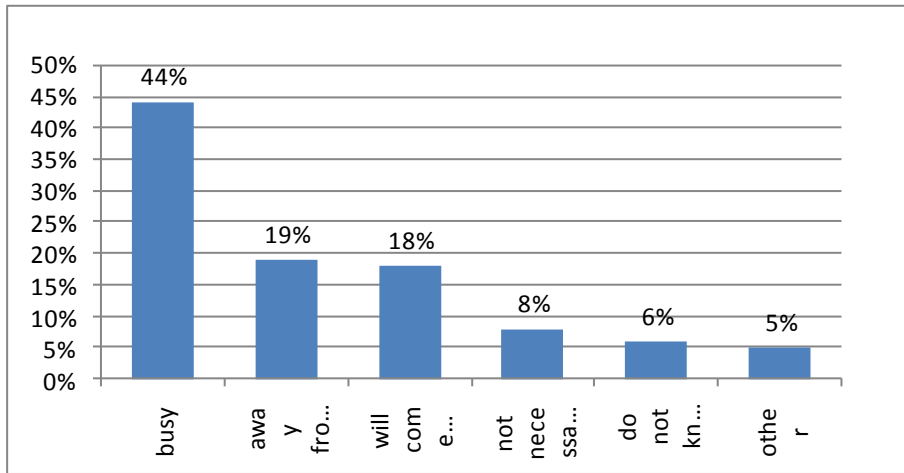
HIV counseling and testing as couple was 12 times higher among those who do not have co-wives. The results are depicted in Table 4 (below).

Table 4: Factors associated with uptake of couple counseling and testing in Korem Health Center, Korem, Tigray, from July to Sept. 2013

	Tested as couple (%) (n=140)	Not tested as a couple (%) (n= 74)	COR	p-value
<b>Have co-wives</b>				0.0045
Yes	0(0)	5(7)	1	
No	140(100)	69(93.3%)	12.09(1.4,271.59)	
<b>Educational level</b>				0.0001
Primary	48(34)	59(80)	1	
Secondary	61(44)	13(18)	5.77(2.7,12.52)	
University/Collage	31(22)	2(2)	19.05(4.12,127.47)	
<b>Earning per month</b>				0.00001
<500	5(4)	17(23)	(0.09,1.01)	
500 – 1000	31(22)	9(12)	3.63(1.42,9.47)	
1000-2000	48(34)	7(9.5)	7.22(2.71,19.97)	
>2000	18(13)	1(1.5)	18.95(2.45,352.25)	
Not earning*	38(27)	40(54)		

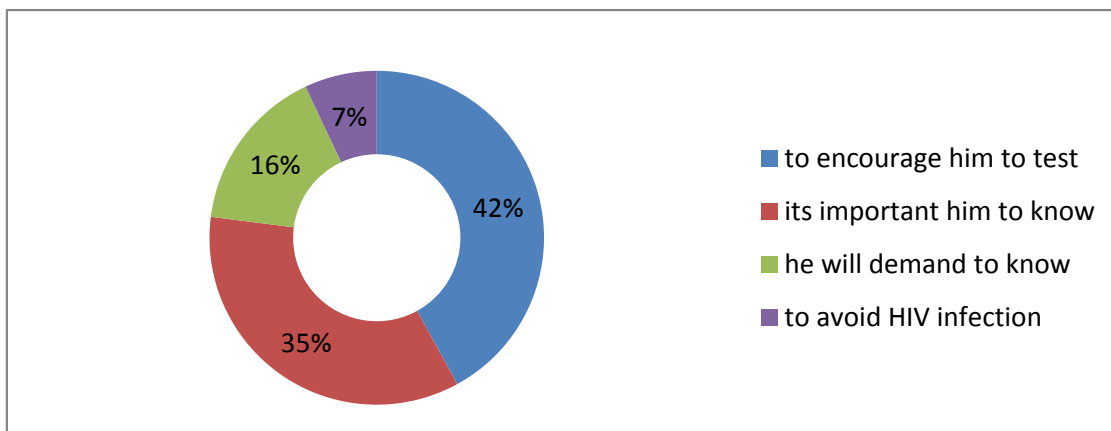
\*Not earning regular income.

Figure 1: Reasons why male partners could not come to the HIV test in Korem Health Center, Korem, Tigray, from July to Sept. 2013



Among the reasons unaccompanied 69 ANC clients gave as to why male partners could not come to ANC clinic for HIV testing and counseling after invitation card was sent was because they were busy on duty (44%); followed by „being away from home“ and „they will come later“ 19% and 18%, respectively (Figure 1, above).

Figure 2: Intention to disclose HIV test result in Korem Health Center, Korem, Tigray, from July to Sept. 2013



Majority, 52 (75.4%) of the ANC clients who tested alone after being offered an invitation card were willing to disclose their HIV test result to their partner. The intention of these ANC clients was mainly „to encourage their partner to take the test“ and „because they believe it is important for their partner to know their HIV status,“ for 42% and 35% of them, respectively (Figure 2).

## 5. Discussion

Increasing awareness of male partner about HIV counseling and testing in ANC and a written invitation card to spouses of antenatal attendees on partner antenatal clinic attendance at Korem health center showed substantial effectiveness of the intervention. The effect of the intervention invitation card and increasing awareness of male partner on couple antenatal attendance was significant. The invitation card and increased awareness couple counseling and testing at the antenatal clinic from approximately 4% to 65.4%. A simple intervention card to the spouse could increase couple attendance by 60%. This cost-effective intervention could be implemented in almost all time in health center and should sustain as system.

A recent study, in Swaziland, a community-based treatment PMTCT-plus project reported there were lower transmission rates to the infant when the male partner was involved and participated in a support group. However, enrolment of male partners was initially very slow but in our project by giving simple invitation card to partner HIV testing become increase.

Study conducted at Makongoro Health Centre in Mwanza, Tanzania, couples counseling was very infrequent, accounting for less than 5% of all HIV testing at the clinic. However, clinic staff came up with the idea to hand deliver a card inviting the male partner to come to the next antenatal clinic (ANC) visit. Within the first month after adopting the strategy, there was a ten-fold increase in male partner involvement in partner counseling and so far it has led to an overall 30% increase in male partner testing were as, our project by using the same method increase male partner testing by 60%.

Study reported in Kenya women's attending at antenatal clinic were participants asked to invite their partner to VCT only 16% of male attendant individual VCT but in our project there is 32.2% as individual counseling, so this indicates our project had limitation in couple counseling.

Study conducted in Nigeria women's attending antenatal clinic were encourage to invite their partner for HIV testing via words of mouth 16.7% of male participant accepted for HIV testing[21]. But in our project using invitation card and increasing awareness of male partner

there were 65.4% of male partner accepted for HIV testing and counseling, so it shows it is effective method.

Study reported in democratic republic Congo the level of male attendance higher in non health facility ( Clinic or hospital).based provision such as in bar and churches were more effective than health care facility in attracting male participation, but in our project limited in health center and reduce suffer of health care provider. Study conducted in Kigali and Lusaka utilized weekend testing to monitor the effectiveness of couple testing and women testing alone, weekend test was feasible, and couple counseling was associated with lower loss follow up, but this limited in our project.[17]

The level of male antenatal attendance in this project was higher than one carried out in northern Tanzania [22], but lower than those documented in studies from northern Uganda [26], central Kenya [23] and Khayelitsha, South Africa [27]. In our project male antenatal attendance was higher if men has attained secondary or higher level education, but partner education level was not significantly associated with male antenatal attendance in northern Uganda. The level of partner attendance in this capstone project was similar to that reported in a study in Nairobi, Kenya [28].

Significantly, the current study demonstrated that the majority (more than 96%) of male partners who attended the antenatal clinic accepted HIV counseling and testing for HIV. A similar finding had been reported in other studies in the region [23, 28]. The implication of this finding was that increasing male antenatal clinic attendance was vital for involving spouses of antenatal attendees in the PMTCT program. A woman having sought a partner's permission for HIV testing was significantly associated with partner antenatal attendance and HIV testing. A similar finding was reported in the Nairobi antenatal clinic study [28]. This suggests that improved communication between couples regarding HIV was an important factor in increasing the number of men accompanying their spouses to antenatal clinics and accessing HIV counseling and testing services.

There are several possible reasons for those who were not accompanied by their male partner in ANC clinic for HIV testing in the next visit, majority 44% of ANC client the reason why was not

accompanied were their partners were very busy at home or work load, and 19% of ANC clients said their partner were away from home, 18% of ANC clients said their partner were busy now they came later, 8% of ANC clients also said once if they know their test result so what is benefit of partners came. Others may not have attended follow-up ANC visits owing to transportation problems.

In addition to invitation card and increasing awareness of antenatal client about partner HIV testing community sensitization and involvement can also have great effectiveness in partner HIV testing and could have helped reduce the loss to accompany and it should sustain as a system.

## **Strength and Limitations**

### **Strength**

This intervention of sending an invitation letter, which is a simple, cheap intervention that was easy to administer; brought significantly higher effect, compared to the traditionally used a „words of mouth“ invitation for ANC clients to bring their partners for HIV couple counseling and testing during PMTCT service.

### **Limitation**

There were Time and budget constraint and lack of commitment in some staff. Consecutive sampling was taken in order to get adequate sample of ANC clients within 3 months period. Thus, theoretically this may affect the generalization of the study. The fact that the data collectors are taken from the study health facility; this may introduce a social desirability bias into the results of the study.

## **6. Conclusions**

Formulated invitation card and increasing awareness of male partner for HIV testing and counseling increased partner HIV testing as a couple in ANC clinic, from 4% to 65.4%, at Korem health center. The trial also demonstrated that after the intervention was done, majority (96.5%) of male partners who attended antenatal clinic accepted HIV counseling and testing. Therefore, strengthening this simple, cheap intervention and assessing its effectiveness in increasing partner participation in antenatal clinic and prevention of mother to child transmission of HIV at Korem health center is important. Thus, this project would have better trial implication for PMTCT program in the health center. The principal investigator ensured that all the management team and board member of the health center accepted to continue the intervention as a system to ensure its sustainability.

## **7. Recommendation**

The Health center should sustain the intervention and partner testing after this trial by implementing the invitation card and strengthening awareness creation to the ANC clients who visited the clinic for PMTCT services, including days during the Weekends. This would enable ANC clients and their male partners to easily access the service at convenient times to the „Busy“ clients. The economic feasibility of the extended service, however, during the weekends need to be studied.

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## 9. ANNEXES

### Annex 1

#### QUESTIONNAIRE/ DATA COLLECTION TOOL

Korem health center ANC clinic partner HIV testing surely study.

Introduction- this is partner HIV testing study which is conducted by Korem health center to asses and improving partner HIV testing after introduction of study intervention.

Code of client \_\_\_\_\_

Consent \_\_\_\_\_

1. client demographic data
  - 1.1 client code
  - 1.2 age
  - 1.3 sex
  - 1.4 Number of visit

#### 1 socio economic characteristics of study

- Marital status	-single - married -other(divorce, widow)
Educational status	Read and write Do not read and write Primary Secondary University/ college
Religion	Orthodox Protestant Muslim others
Personal monthly income(EDHS 2011 category of wealth)	

- 2 Have you ever been tested for HIV before?

- A. Yes
  - B. No
- 3 If the answer no is to Q3, are willing to test in the future?
- A. Yes
  - B. No
- 4 Are you willing to disclose your result to your partner?
- A. Yes
  - B. No
- 5 If the answer Q 4 yes, what is the important?
- A.He will demand to know.
  - B.It is important for him to know.
  - C.To avoid HIV infection.
  - D.To encourage him to test.
- 6 If the answer Q5 is no, why?
- A.Fear of abandonment.
  - B.Fear of anger.
  - C.Fear of stigma and discriminations.
  - D. Fear of break up relationship.
8. Did your partner HIV testing before?
- A. yes
  - B. no
9. If yes answerQ8, what is the result?
- A. positive
  - B. negative
  - C. not known
10. Reason why male partner could not come for HIV testing?
- A. Not necessary
  - B. Busy.
  - C. Away
  - D. will come later.
  - E. Do not know
  - F. Other.

## 11. Factors associated with uptake of couple counseling and testing?

Have co wife?	Yes No
Educational status	Primary Secondary College/university
Earning per month	$\geq 500$ 500 =1000 1000 =200 >2000 Not earning