



# Barriers to Assisted Partner Notification Services among HIV Infected Adults on HIV Care in Seme and Kisumu West Sub Counties

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## Summary

### BACKGROUND

Despite achievements in scaling up of antiretroviral therapy access worldwide, a substantial testing gap still remains. In Kenya, slightly more than half (53.1%) of HIV-positive individuals were not aware of their status in 2014. Currently, assisted partner notification services (aPNS) is now part of the World Health Organizations' guidelines for standard practices for persons living with HIV (PLHIV), however, there are a number of barriers to aPNS uptake. Therefore, we investigated factors that obstruct assisted partner notification services in this setting.

### MATERIALS AND METHOD

A descriptive cross-sectional quantitative study was conducted in 2020 in Seme and Kisumu West sub counties among HIV positive participants age  $\geq 18$  years attending Kombewa, Manyuada and Chulaimbo health facilities. Generalized linear modelling framework and log-binomial regression was used to model the occurrence of APNS and compared it among categories of explanatory variables using crude and multivariable-adjusted prevalence ratio.

### RESULTS

More than half, (55%) of the 423 participants were females. Majority (34%) were aged between 26-35 years. Age, highest level of education attained, occupation and residence were significantly associated with assisted partner notification services. Participants who cited embarrassment as a barrier were 55% more likely not to participate in aPNS compared to those who did not cite embarrassment as a barrier (APRS=1.55; 95% CI, 1.12-2.15,  $p=0.009$ ). At the same time, participants who cited stigma as a barrier were 44% more likely not to participate in aPNS compared to those who not mentioning stigma as a barrier (aPR=1.44; 95% CI, 1.06-1.95,  $p=0.018$ ). Those mentioning unfriendly services had nearly 4-fold risk of not participating in APNS (APR=3.74; 95% CI, 2.72-5.14,  $p<0.001$ ).



## CONCLUSION

Embarrassment and fears of stigma in the community came out strongly as a big hindrance to participating in aPNS. Highest education level attained emerged as a stronger demographic risk of not participating in aPNS as a client's decision to provide partner information may depend on the level of education.

**Keywords:** Barriers, Assisted Partner notification, Persons living with HIV, HIV testing.

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## Introduction

Despite the substantial effort by the ministry of health and progress in trying to expand HIV testing services in Kenya, overall HIV testing coverage still remains far below Kenya's national goal of testing 80% of all adolescents and adults<sup>1</sup>. To this end, HIV testing and counselling (HTC) remains key to HIV prevention, care and treatment. Research demonstrates that Knowledge of HIV status among HIV-infected persons is associated with approximately 60% reduction in transmission risk behaviour<sup>2,3</sup>. Despite achievements in scaling up of antiretroviral therapy access worldwide, a substantial testing gap still remains. Diagnosing 90% of those living with HIV remains the most elusive target worldwide<sup>4</sup>. In Kenya, slightly more than half (53.1%) of HIV-positive individuals were not aware of their status in 2014<sup>5</sup>. Currently, assisted partner notification services is now part of the World Health Organizations' guidelines for standard practices for persons living with HIV (PLHIV). Assisted partner notification services significantly and safely increases the uptake of HIV testing services (HTS) for partners of newly diagnosed PLHIV and can improve case finding and linkage to care<sup>[6]</sup>.

Assisted partner notification service (aPNS) is a public health strategy which entails a health worker interviewing person with HIV/STI (index cases) about their sexual partner(s) and/or contacts and then providing the

index case with some level of assistance notifying their partner(s) and assuring their testing. Some health departments in parts of the United States (US) and Europe developed aPNS programs targeting HIV as early as the 1980s, and they have demonstrated that aPNS is an effective strategy towards HIV case finding and promotion of safer behaviours<sup>[7]</sup>. However, there are a number of barriers to aPNS uptake, including, fear, lack of knowledge, perception of risk, healthcare systems, relationship attributes and testing location<sup>[8,9]</sup>. A study done in Kenya in 2016 to understand barriers to scaling up HIV assisted partner services found that lack of trust in the HTC counsellor led many to fear a breach of confidentiality, which exacerbated the fears of stigma in the community and relationship conflicts. The findings further revealed that the type of relationship affected the decision to provide partner information, and the lack of understanding of aPNS at the community level contributed to the discomfort in enrolling in the study<sup>[9]</sup>.

Better understanding of the factors that obstruct and facilitates HIV testing are key to enhancing and scaling up of aPNS in this study population and beyond.

## Materials and Methods

### *Setting and design*

A descriptive cross-sectional quantitative study was conducted in 2020 in Seme and Kisumu West sub counties of Kisumu County among HIV positive participants age  $\geq$



18 years attending Kombewa, Manyuada and Chulaimbo health facilities. Two health facilities were randomly selected from Seme and one health facility was randomly selected from Kisumu West. These were Kombewa, Manyuada and Chulaimbo, respectively. These facilities accounted for a larger proportion of the clients on care in the two sub counties. The areas were selected purposively because they cover the health and demographics surveillance area (HDSA) that is in Seme and Kisumu West sub counties.

### ***Study procedure***

A total of 423 study participants were included in the study. Stratified sampling technique was used to represent each health centres then simple random techniques was used to select participant from each stratum was used to select participants from each health centre proportionately. We included study participants aged above 18 years, those who attended HIV clinical care in the sampled health facilities; and were willing to consent to participate in the study. Sampling was based on the target population of 9,942 individuals as per the population profile of Seme and Kisumu West Sub Counties. Interviewer administered structured questionnaires were read out for the participants by the research assistants in the language they best understand- either English or *Dholuo*. Informed written consent was obtained from all participants. Confidentiality, voluntariness and anonymity were assured.

Ethical approval for the research was obtained from Jaramogi Oginga Odinga Teaching and Referral Hospital (JOTRH) Ethical Approval Board, Ministry of Health- Kisumu County Director of Health office, Seme and Kisumu West Sub County Medical Officer of Health Offices, Medical Superintendents at

Kombewa and Chulaimbo County Hospital and Facility in-charge at Manyuada Sub County Hospital.

### ***Measures of assisted partner notification service***

Participants were asked if they participated in assisted partner notification. Those who responded “yes” were coded as having participated and those who responded “no” were coded as not having participated.

### ***Independent factors***

Other demographic variables include: age, gender, highest education level, marital status, religion and area of residence were collected.

### ***Statistical analysis***

Descriptive statistics was used to characterize the sample. We conducted separate bivariate and multivariate analyses to examine associations between participation of assisted partner notification and demographic characteristics.

Employing generalized linear modelling framework and log-binomial regression, we modelled occurrence of aPNS and compared it among categories of explanatory variables using crude and multivariable-adjusted prevalence ratio (aPR) and 95% confidence interval (CI). Variables significant at the 0.2 level in univariable analysis underwent further examination using a multivariable regression model. Potential confounding effect of each covariate and two-way interactions was addressed.

Analysis and comparisons were done 0.05 level of significance

The analyses were completed using STATA version 14.2 (STATA Corporation, College Station, Texas, USA)



**Table 1: Socio-Demographic Characteristics of the Study Population**

Variables	n	%
<b>Age category</b>		
18-25 yrs	72	17.1
26-35 yrs	141	33.5
36-45 yrs	129	30.6
Above 45 yrs	79	18.8
<b>Gender</b>		
Male	190	45.5
Female	228	54.5
<b>Marital status</b>		
Single	70	16.9
Married	262	63.4
Cohabiting	2	0.5
Separated/Divorced/Widowed	79	19.1
<b>Residence</b>		
Permanently residing in rural setting/home	307	73.3
Permanently resides in urban setting/home	64	15.3
Works in urban centre and resides in rural home	37	8.8
Works in rural setting and resides in urban home	11	2.6
<b>Occupation</b>		
Self employed	167	40
Employed	96	23
Peasant	97	23.3
Unemployed	57	13.7
<b>Religion</b>		
Christian	397	95
Islam	6	1.4
Traditional Religion	9	2.2
Pagan	6	1.4
<b>Population type</b>		
Sex worker	2	0.5
Uninformed forces	2	0.5
Truck driver	2	0.5
Adolescent girl and young women	22	5.3
General population	349	83.9
Fisher folk	17	4.1
Boda boda driver	20	4.8
<b>Highest level of education</b>		
None	13	3.1
Primary level	212	50.5
Secondary level	124	29.5
College/University level	71	16.9

## Results

A total of 423 participants were included in the study. Majority, more than half (55%) were females, majority (34%) were aged

between 26-35 years. Most of the respondents in the study resided in the rural setting (73%) and less than a half of them were self-employed (40%). Approximately a half of the participants



(51%) attained primary level of education. (Table 1).

Respondents who were employed were 40% more likely not to participate in aPNS compared to those who were self-employed (PR=1.40; 95% CI, 1.89-1.97, p=0.054) while those who were peasants were 53% more likely to participate in aPNS compared to those who were self-employed ((PR=0.53; 95% CI, 0.33-

0.99, p=0.047). Moreover, those with college and university were 56% more likely not to participate in aPNS compared to those with no education. (PR=1.56; 95% CI, 1.06-2.28, p=0.023). Further those in the urban were 46% more likely not to engage in aPNS compared to those in the rural (PR=1.46; 95% CI, 1.05-2.05, p=0.026) (Table2).

**Table 2: Association between Participants Socio-Demographic Characteristics and aPNS**

Variable/Factor	Total(N)	No(n(%))	Yes(n(%))	OR(95% CI)	p value
<b>Age category</b>					
18-25 yrs	72(17.1)	27(37.5)	45(62.5)	0.76(0.49-1.18)	0.218
26-35 yrs	141(33.5)	37(26.2)	104(73.8)	0.98(0.64-1.52)	0.942
36-45 yrs	129(30.6)	48(37.2)	81(62.8)	0.56(0.31-1.01)	0.056
Above 45 yrs	79(18.8)	17(21.5)	62(78.5)	Ref	
<b>Occupation</b>					
Self employed	167(40.0)	51(30.5)	116(69.5)	Ref	
Employed	96(23.0)	43(44.8)	53(55.2)	1.40(0.99-1.97)	0.054
Peasant	97(23.3)	17(17.5)	80(82.5)	0.57(0.33-0.99)	0.047
Unemployed	57(13.7)	17(29.8)	40(70.2)	1.04(0.64-1.70)	0.879
<b>Religion</b>					
Islam/Traditional/Pagan	21(5.0)	10(47.6)	11(52.4)	Ref	
Christian	397(95.0)	119(30.0)	278(70.0)	0.35(0.10-1.19)	0.091
<b>Highest level of education</b>					
None/Primary level	225(53.6)	59(26.2)	166(73.8)	Ref	
Secondary level	124(29.5)	41(33.1)	83(66.9)	1.24(0.87-1.77)	0.239
College/University level	71(16.9)	30(42.3)	41(57.7)	1.56(1.06-2.28)	0.023
<b>Residence</b>					
Rural	344(82.1)	96(27.9)	248(72.1)	Ref	
Urban	75(17.9)	34(45.3)	41(54.7)	1.46(1.05-2.05)	0.026

Participants who cited embarrassment as a barrier were 55% more likely not to participate in aPNS compared to those who did not cite embarrassment as a barrier (aPR=1.55; 95% CI, 1.12-2.15, p=0.009). Those who cited stigma as a barrier were 44% more likely not to participate in aPNS compared to those not mentioning stigma as a barrier (aPR=1.44; 95% CI, 1.06-1.95, p=0.018). Similarly, those mentioning unwillingness of a partner to notify a partner had

more than 2-time risk of not participating in aPNS compared to those not mentioning it (aPR=2.26; 95% CI, 1.04-4.88, p=0.042). Whereas those mentioning unfriendly services had nearly 4-fold risk of not participating in aPNS (aPR=3.74; 95% CI, 2.72-5.14, p=<0.001). As for the participants reporting confidentiality as a barrier, they were 34% less likely not to participate in aPNS (aPR=0.66; 95% CI, 0.45-0.98, p=0.037) (Table 3)



**Table 3: Distribution of Barriers to aPNS among the Respondents**

<b>Barriers</b>	<b>Total(N)</b>	<b>aPNS non beneficiaries n (%)</b>	<b>aPNS beneficiaries n (%)</b>	<b>AOR (95%CI)</b>	<b>p value</b>
<b>Embarrassment.</b>					
No	178(42.1)	42(23.6)	136(76.4)	1	
Yes	245(57.9)	89(36.3)	156(63.7)	1.55(1.12-2.15)	0.009
<b>Fear autonomy and emotional support loss.</b>					
No	320(75.7)	97(30.3)	223(69.7)	1	
Yes	103(24.3)	34(33.0)	69(67.0)	1.01 (0.58-1.77)	0.965
<b>Stigma.</b>					
No	193(45.6)	45(23.3)	148(76.7)	1	
Yes	230(54.4)	86(37.4)	144(62.6)	1.44(1.06-1.95)	0.018
No	179(42.3)	50(27.9)	129(72.1)	1	
Yes	243(57.4)	81(33.3)	162(66.7)	1.04(0.77-1.40)	0.807
<b>Not knowing a partner.</b>					
No	352(83.2)	108(30.7)	244(69.3)	1	
Yes	71(16.8)	23(32.4)	48(67.6)	0.88(0.61-1.26)	0.653
<b>Availability of partner(s) contacts</b>					
No	354(83.7)	106(29.9)	248(70.1)	1	
Yes	69(16.3)	25(36.2)	44(63.8)	0.77 (0.38-1.56)	0.470
<b>Unwillingness of a partner notification of partner.</b>					
No	344(81.3)	112(32.6)	232(67.4)	1	
Yes	79(18.7)	19(24.1)	60(75.9)	2.26 (1.04-4.88)	0.042
<b>Unfriendly services.</b>					
No	385(91.0)	105(27.3)	280(72.7)	1	
Yes	38(9.0)	26(68.4)	12(31.6)	3.74(2.72-5.14)	<0.001
<b>Health care workers attitudes.</b>					
No	382(90.3)	116(30.4)	266(69.6)	1	
Yes	41(9.7)	15(36.6)	26(63.4)	0.92(0.57-1.47)	0.565
<b>Confidentiality.</b>					
No	337(79.7)	105(31.2)	232(68.8)	1	
Yes	86(20.3)	26(30.2)	60(69.8)	0.66(0.45-0.98)	0.037
<b>Denial of HIV status.</b>					
No	343(81.1)	107(31.2)	236(68.8)	1	
Yes	80(18.9)	24(30.0)	56(70.0)	0.80(0.53-1.20)	0.315

## Discussion

While there exists substantial literature on factors associated with higher or lower HIV testing rates, there remains paucity of knowledge concerning some of the major barriers to assisted partner notification to HIV testing and counselling in this particular setting with high burden of HIV. Our findings suggest that a sizable proportion of the participants (31%) still does not embrace and accept aPNS. This

quantitative study identified some of the key barriers to implementation of aPNS.

Our findings revealed that increase in education level is associated with decrease in aPNS. Those with college/university level of education were more likely not to participate in aPNS compared to those with none or primary level of education. The findings conform to other studies which have found higher education level to be associated with HIV testing, for instance a study of determinants of HIV testing





and counselling in Nairobi urban informal settlement found that gender, age, education level and marital status were associated with HIV testing <sup>[10]</sup>. Although contrary to our findings, another aPNS qualitative study done in Nairobi in 2019 reported difficulty in approaching communication due to little or lack of education by partner <sup>[11]</sup>. A study in the United States in 2018 found that if education included some college or technical school versus less than high school, then there was likelihood of successful partner notification (AOR = 1.72, 1.04-2.85) <sup>[12]</sup>. Participants in urban were less likely to participate in aPNS compared to their rural counterparts. These findings are consistent with a study of index participants characteristics which established high efficacy of aPNS in rural areas, and according to studies, this can be explained by the low testing rates in rural areas as well as access to testing sites in rural settings <sup>[13]</sup>.

The study identified embarrassment, stigma, unwillingness to notify partner, unfriendly services and lack of confidentiality as the main barrier to participating in aPNS. Similar results were observed in a study done in Indonesia where participants with anticipated stigma were less likely to endorse provider referral for sex partners (adjusted odds ratio [OR] = 0.58, 95% CI: 0.35, 0.96) <sup>[14]</sup>. The findings of this study are consistent with studies which established concerns about humiliation, remorse, shame, the loss of independence and emotional support, besides suspicions of stigma, rejection, desertion and relationship separation, were main obstructions that individuals suggested would hinder them from informing partners/companions <sup>[15,16]</sup>. Findings also concur with a study in China on barriers to partner notification for HIV prevention which indicated

that stigma, discrimination and possible negative consequences <sup>[17]</sup>.

Further according to a qualitative study on understanding barriers to assisted partner notification scale up in Sub-Saharan Africa, stigma and breach of confidentiality was some of the barriers to the strategy <sup>[9]</sup> and according to a qualitative study on barriers to partner notification in Barbados, fear, stigma and discriminations were some of the factors that deter the strategy <sup>[15]</sup>. Confidentiality is a primary cause for concern among PLHIV <sup>[14]</sup>. It is a common barrier to engaging in aPNS services and drove preferences for patient referral methods in our study. HIV status disclosure is considered highly personal and confidential, and from this study, there seem to be concerns that notification without the presence of the index patient may be harmful to the relationship.

This study was not without limitations. Since the outcome was self-reported, there is a possibility of a reporting bias due to social desirability. Additionally, our study might have suffered a recall bias due to time lag. We also had quantitative data which was not all that exploratory. However, our results add to the knowledge about barriers to the implementation of APS in sub-Saharan Africa.

## Conclusion

Lack of trust in the HTC counsellor may lead many to fear a breach of confidentiality, which in turn affects participating in aPNS, furthermore the embarrassment and fears of stigma in the community came out strongly as a big hindrance to participating in aPNS. Highest education level attained emerged as a stronger demographic risk of not participating in aPNS as a client's decision to provide partner information may depend on the level of education



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## Authors' contributions

All authors whose names appear on the submission made substantial contributions to the conception or design of the work including the acquisition, analysis, or interpretation of data. They drafted the work and revised it critically for important intellectual content; approved the version to be published; and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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