

**DETERMINANTS OF ASSISTED PARTNER
NOTIFICATION SERVICES FOR HIV TESTING AMONG
ADULTS ON HIV CARE IN SEME AND KISUMU WEST
SUB COUNTIES - KENYA**

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**Determinants of assisted partner notification services for HIV testing
among adults on HIV care in Seme and Kisumu West Sub Counties -
Kenya**

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**Thesis Submitted in Partial Fulfillment of the Requirements for the
Award of the Degree in Master of Science in Public Health of Jomo
Kenyatta University of Agriculture and Technology**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I dedicate this work to my parents and family, as well as my friends Dr. Valentine Sing'oei and Faith Jerono Magut for their support and encouragement throughout the duration of my studies.

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TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS	v
LIST OF TABLES	xi
LIST OF FIGURES.....	xiii
LIST OF APPENDICES	xiv
LIST OF ABBREVIATIONS AND ACRONYMS	xvi
DEFINITION OF TERMS.....	xx
ABSTRACT.....	xxi
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background Information.	1
1.2 Statement of the Problem.....	3
1.3 Justification of the study.	4
1.4 Objectives.	5
1.4.1 Broad Objective:	5

1.4.2 Specific objectives:	5
1.5 Research questions:.....	5
1.6 Scope of the study.....	6
1.7 Limitations of the study.	6
CHAPTER TWO	7
LITERATURE REVIEW.	7
2.1 Introduction.....	7
2.2 Theoretical Framework.....	7
2.2.1 aPNS.....	7
2.3 Conceptual framework.....	8
2.4 Empirical Review.....	9
2.4.1 Preferred HIV aPNS Approaches and Contact Referral Methods.	9
2.4.2 Barriers to aPNS.....	15
2.4.3 Linkage to HIV Care and Treatment among Partners of HIV-Positive Clients	18
2.4.4 Social harm following aPNS.	19
2.4.5 Cost and cost-effectiveness of aPNS.....	19
2.4.6 Mitigating risks and protecting against potential harm.	20

2.4.7 Implementation considerations for success.	21
2.4.8 Facilitating linkage to prevention, treatment and care.	21
2.5 Research Gap.	22
CHAPTER THREE	23
RESEARCH METHODOLOGY	23
3.1 Introduction.....	23
3.2 Study Site.	23
3.2.1 Seme and Kisumu West sub counties.	23
3.3 Study Design.....	25
3.4 Study population.	25
3.4.1 Sample size determination.	25
3.4.2 Inclusion Criteria.	26
3.4.3 Exclusion Criteria.....	26
3.4.4 Variables.....	27
3.4.5 Independent variables.....	27
3.4.6 Others Independent variables included:	28
3.4.7 Intermediate variables.	28
3.5 Sampling.	28

3.5.1 Sampling Techniques.	28
3.6 Data Management.	30
3.6.1 Data Collection.	30
3.7 Pre-testing of Study Instruments.	31
3.7.1 Validity and reliability.	31
3.7.2 Data Entry.	31
3.8 Data Analysis.	32
3.9 Dissemination of findings.	32
3.10 Ethical considerations.	32
CHAPTER FOUR.	34
RESULTS AND DISCUSSION.	34
4.1 Introduction.	34
4.2 Response rate.	34
4.3 Preferred method of aPNS.	35
4.4 Barriers of aPNS among the study respondents.	36
4.4.1 Association between aPNS and benefits of aPNS among the respondents.	38
4.5 Socio demographic characteristics of the study respondents.	41

4.5.1 Key areas under social demographic characteristics given more attention	44
4.5.2 Period Under care.....	44
4.5.3 Number of sexual partners.	44
4.5.4 Strategy of identification.....	45
4.6 Association between socio-demographic variables and barriers to uptake of aPNS.....	46
4.6.1 Marital status.....	48
4.6.2 Residence	49
4.6.3 Occupation.....	49
4.6.4 Religion.....	50
4.6.5 Population Type.....	50
4.6.6 Strategy of identification.....	51
4.6.7 Period on care.....	52
4.6.8 Sexually active.....	52
4.6.9 Condom use.....	53
4.6.10 Number of sexual partners.....	53
4.6.11 Comparison on how social demographic characteristics affected aPNS uptake.....	54

CHAPTER FIVE.....	57
DISCUSSION SUMMARY AND CONCLUSION.....	57
5.1 Introduction.....	57
5.2 Discussions of the findings.....	57
5.2.1 The study sought to establish the preferred method(s) of aPNS.....	57
5.2.2 Barriers to aPNS.....	58
5.2.3 Distribution of socio-demographic characteristics among the respondents.....	60
5.2.3.1 Association between socio demographic characteristics and aPNS.	61
5.3 Conclusions and Recommendations.....	63
5.3.1 Conclusions.....	63
5.3.2 Recommendations of the study.....	63
5.3.3 Suggestions for further studies.....	64
REFERENCES.....	65
APPENDICES.....	76

LIST OF TABLES

Table 3.1: Population per constituency/sub-county.	24
Table 3.2: Population projection and projection by constituency.	25
Table 3.3: Sample size determination by selected study facilities using probability proportion to size (PPS).....	29
Table 4.1: Response rate.	34
Table 4.2: Beneficiary and non-beneficiary of aPNS.....	35
Table 4.3: Preferred method of aPNS.	35
Table 4.4: Reasons for not enlisting for aPNS.	37
Table 4.5: Association between aPNS and benefits of aPNS among the respondents..	38
Table 4.6: Distribution of barriers and reasons for not listing to aPNS among the respondents.	39
Table 4.7: Distribution of barriers and reasons for not listing to aPNS among the respondents.	40
Table 4.8: Distribution of respondents by Socio-demographic characteristics.....	41
Table 4.9: Distribution of Socio-demographic characteristics of respondents.	42
Table 4.10: Distribution of respondents by Socio-demog characteristics.....	43
Table 4.11: How age affects the uptake of aPNS.....	46
Table 4.12: How sex affects uptake of aPNS.....	47

Table 4.13: How level of education affect uptake of aPNS	48
Table 4.14: How marital status affected uptake of aPNS.....	48
Table 4.15: How residence affected uptake of aPNS	49
Table 4.16: How occupation affected uptake of aPNS.	49
Table 4.17: How religion affected uptake of aPNS.....	50
Table 4.18: How population type affected the uptakes of aPNS.....	50
Table 4.19: How place of testing affected uptake of aPNS.....	51
Table 4.20: How period on care affected aPNS	52
Table 4.21: How being sexually active affected aPNS uptake.....	52
Table 4.22: How condom use affected aPNS uptake	53
Table 4.23: How number of sexual partners influenced aPNS uptake.....	53
Table 4.24: Comparison on how social demographic characteristics affected aPNS uptake	54
Table 4.25: Comparison on how social demographic characteristics affected aPNS uptake	55

LIST OF FIGURES

Figure 4.1: Preferred referral methods for aPNS.	36
Figure 4.3: Distribution of the respondents by period under care.....	44
Figure 4.4: Distribution of the respondents by number of sexual partners.....	45
Figure 4.5: Strategy of identification.	46
Figure 4.6.: Uptake of aPNS versus non-uptake between male and female respondents.	47
Figure 4.7: How population type affected aPNS uptake.....	51

LIST OF APPENDICES

Appendix I: Consent Form (English Version)	76
Appendix II: Oboke Yieruok (<i>Dholuo</i> Version).....	84
Appendix III: Questionnaire (English Version)	Error! Bookmark not defined.
Appendix IV: Oboke Penjo (<i>Dholuo</i> Version)	100
Appendix V: Map of Kenya showing Total New Infections, by County	109
Appendix VI: Map showing HDSS health facilities in Seme and Kisumu West sub counties.....	Error! Bookmark not defined.
Appendix VII: Translation certificate for consent form.	111
Appendix VIII: Translation certificate for questionnaire.	112
Appendix IX: Ethical approval letter.	113
Appendix X: Kisumu County Director of Health data collection approval letter.	114
Appendix XI: Kisumu County Commissioner research authorization letter.	115
Appendix XII: Kisumu County Director of Education research authorization letter	Error! Bookmark not defined.
Appendix XIII: NACOSTI research authorization letter	Error! Bookmark not defined.
Appendix XIV: NACOSTI research permit.....	118
Appendix XV: JKUAT Board of Postgraduate Studies research approval letter .	Error! Bookmark not defined.

Appendix XVI: IJSRED Publication certificate- Anangwe Munala Samson.....	120
Appendix XVII: IJSRED Publication certificate- Dr. Dennis G. Magu.....	121
Appendix XVIII: IJSRED Publication certificate- Dr. Fredrick Otieno	122
Appendix XIX: IJSRED Publication: Preferred Methods of Assisted Partner Notification Services in Seme and Kisumu West Sub Counties, Kenya.	Error! Bookmark not defined.
Appendix XX: IJRP.ORG Publication certificate- Anangwe Munala Samson, Dr. Dennis G. Magu and Dr. Fredrick Otieno. ...	Error! Bookmark not defined.
Appendix XXI: IJRP.ORG Publication: Factors associated with Assisted Partner Notification Services in Seme and Kisumu West Sub Counties, Kenya.....	125

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
aPNS	Assisted partner notification services
ART	Anti-retroviral therapy
CBD	Central Business District
CCC	Comprehensive care centers
CD4	Count- Cell differentiation 4 T lymphocyte Count
CDC	Centres of Disease Control
CI	Confidence Interval
CRC	Clinical Research Centre
DHIS	District Health Information System
DSA	Demographic Surveillance Area
FSWs	Female sex workers
GAP Report	Global AIDS progress report
GDG	Guideline development group
GRADE	Grading of Recommendations, assessment, development and Evaluation
HAART	Highly Active Antiretroviral Therapy

HDSS	Health Demographic Surveillance System
HIV	Human immuno deficiency virus
HIVST	HIV Self-Test
HTS	HIV testing services
ICER	Incremental Cost Effectiveness Ration
IERB	Institutional Ethical Review Board
IERC	Institutional Ethical Review Committee
IJRED	International Journal of Scientific Research and Engineering Development
IJRP.ORG	International Journal for Research Publications
IPV	Intimate Partner Violence
IRB	Institutional Review Board
JOOTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
KAIS	Kenya AIDS Indicator Survey
KARPR	Kenya AIDS Response Progress Report
KEMRI	Kenya Medical Research Institute
KENPHIA	Kenya Population-based HIV Impact Assessment
KM²	Square Kilometers

KMs	Kilometers
KNBS	Kenya National Bureau of Statistics
KNH	Kenyatta National Hospital
KP	Key Population
MOH	Ministry of Health
MSM	Men having sex with Men
NACOSTI	National Commission of Science, Technology and Innovation
NASCOP	National AIDS and STI Control Program
PEPFAR	U.S. President’s Emergency Plan for AIDS Relief
PLHIV	People living with HIV
PPS	Probability proportion to size
PrEP	Pre- exposure prophylaxis
PWIDs	People who inject drugs
RA	Research Assistant
RDTs	Rapid Diagnostic Tests
SCHMT	Sub County Health Management Team
SPSS	Statistical Package for Social Sciences
STATA	General Purpose statistical software package created in 1985 by

	Statacorp
STD	Sexually Transmitted Diseases
STI	Sexually transmitted infections
TASP	Treatment as prevention
TB	Tuberculosis
U.S	United States
UK	United Kingdom
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
U.S \$	United States Dollar
USAMRU- K	United States Army Medical Research Unit- Kenya
VCT	Voluntary Testing and Counseling
VMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

DEFINITION OF TERMS

UNAIDS 95-95-95 Global targets for achievement of HIV epidemic control; 95% testing, Treatment and viral suppression targets. As well as 95% access to Combination prevention services; 95% access to sexual reproductiveHealth Services; and 95% coverage of prevention of mother-to-child Transmission services.

Client referral The index client takes responsibility for disclosing their HIV status to Partner(s) and encouraging partner(s) to seek HTS. This is often done Using ainvitation letter or referral slip.

Contract referral This method entails the index client enters into a “contract” with the Counselor and/or health care provider whereby he or she agrees to Disclose their HIV status to their partner(s) and refer them to HTS within A certain time frame.

Dual referral In the context of this referral method; HTS counselors/providers sit with The HIV-positive client (index client) and his/her partner(s) to provide Support as the client discloses his/her HIV status. The provider also Offers voluntary HTS to the partner(s).

Provider referral In the context of this referral method; with the consent of the HIV- Positive index client, the HTS counselor/provider directly contacts the Client’s partner(s), informs them that they have been exposed to HIV, And offers them voluntary HTS while maintaining the confidentiality of The index client.

ABSTRACT

Globally, assisted partner notification services (aPNS) has been found to be an efficient and cost-effective strategy towards human immunodeficiency virus (HIV) case finding and promotion of safer behaviors through HIV testing services (HTS). In sub-Saharan Africa, evidence showed that aPNS was acceptable, safe and provided preliminary evidence that it can be productively implemented to address major HIV case finding gaps. Therefore, there is need to investigate the determinants of aPNS. According to a study in Kenya, HIV case finding progress was made with 67% of infected individuals knowing their status due to aPNS. Since the current HTS approaches are not sufficient to get to 95% HIV case finding target by the year 2030, several studies have demonstrated that aPNS is an effective strategy in increasing HIV testing and linkage. However, there is need to understand the factors associated with the strategy. Increase of linkage to treatment among new identified HIV positive individuals due to aPNS has led to a decrease in HIV transmission. However, there is limited evidence on factors associated with uptake of aPNS. Consequently, the main objective of this study was to establish determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu West Sub counties. The study was descriptive cross sectional by design. The study population was 9,942 HIV infected individuals accessing HIV care and treatment services in the study area, from which a sample size of 423 was drawn. The study sites were selected through stratified sampling method; 2 high volume facilities in Seme Sub County and 1 high volume facility in Kisumu West Sub County. Probability proportionate to size was used in respect to the population size among clients on HIV care and treatment services in the selected facilities. This enabled determination of the number of participants to be interviewed for each of the selected facilities. Within study facilities, simple random sampling was used to select study participants. Data was collected using questionnaires and analyzed for both descriptive and inferential statistics using STATA version 14.2. Findings indicated that, majority of the respondents (70%) had participated in aPNS prior to the study. Further, regarding referral methods, most respondents (40.4%) preferred provider referral followed by client referral (26.0%) with contract referral being the least preferred (20.8%). However, client referral method was the most preferred among those who had participated in aPNS (75.5%) while dual referral method was the preferred among those who had not benefited from aPNS (37.1%). The major barriers to enlisting partners for aPNS included stigma (30%), fear of separation (27.9%) and fear of taking blame (18.9%). Additionally, aPNS beneficiaries were 48% less likely to mention embarrassment and shame as one of the barriers of aPNS compared to aPNS non-beneficiaries (aOR=0.52; 95% CI, 0.31-0.87, p=0.013*). Moreover, those who had benefited from aPNS were 43% less likely to mention stigma as one of the barriers to aPNS compared to those who had not benefited from aPNS (aOR=0.57; 95% CI, 0.35-0.95, p=0.030*). Similarly, unfriendly services were the most common barrier among the non-beneficiaries. Those who participated in aPNS were 94% less likely to mention unfriendly services as one of the barriers (aOR=0.06; 95% CI, 0.02-0.18, p=<0.001*). However, unwillingness and inability to notify partner was the common barrier of

aPNS among the beneficiaries. Beneficiaries were 2.3 times more likely to indicate unwillingness and inability to notify partner as one the barriers to aPNS (aOR=2.26; 95% CI, 1.04-4.88, p=0.039*). The association between aPNS and benefits of aPNS among the respondents was determined statistically significant (p=0.021). Notably, findings indicated that the only social demographic characteristic that had significance with aPNS uptake was residence of respondents (p=0.014*). The study recommended; implementation of both provider and client referral methods of notifying partners, aPNS implementation targeting urban settings and the younger generation and demand creation through health talks to increase awareness on the importance of aPNS.

CHAPTER ONE

INTRODUCTION.

1.1 Background Information.

Globally, identification for HIV through testing is vital and crucial to the control of the HIV epidemic. In spite of improved consciousness of HIV status and expanded access to antiretroviral therapy (ART); assessments show that 61% of HIV positive people in Sub-Saharan Africa do not know of their status. Hence, there is an urgent need to intensify HIV testing in order to achieve the UNAIDS 95-95-95 objectives by 2030 (UNAIDS REFERENCE, 2015). Estimates indicate that one out of four PLHIV globally did not know their HIV status, despite efforts and resources invested towards HIV testing within the UNAIDS 95-95-95 strategy (UNAIDS REFERENCE, 2015). Therefore, to actualize this goal, current HIV testing efforts must be significantly scaled up. The main breaking point in the treatment cascade stops at the HIV case finding and diagnosis level across many countries. This led to the implementation of aPNS, as a public health intervention targeting individuals recently diagnosed with HIV infection and facilitate their linkage to care (Dalal *et al.*, 2017). This aPNS, is a public health approach through which a health worker interrogates a person who has been identified with a sexually transmitted infection (STI); (index cases) regarding their sexual partner(s) and/or associates and then provides the index case with some degree of assistance notifying their partner(s) and ensuring their testing. Some health sectors in parts of the United States (U.S) and Europe have progressively developed aPNS programs targeting HIV as early as during the 1980s period. These programs have confirmed that aPNS is an effective intervention towards HIV case finding and promotion of safer behaviors (Hogben *et al.*, 2007). Despite the strategy being resource intensive, research shows that aPNS can be cost effective. On the other hand, aPNS necessitates discretion so as to avert intimate partner violence (IPV). Hence, integration of routine IPV screening into aPNS has resulted into social harm being rarely reported (Hogben *et al.*, 2007).

According to a study in Palermo, aPNS was very pivotal in the fight against the spread of HIV (Dalle Nogare *et al.*, 2014). Additionally, Garcia de Olalla *et al.* (2015) study in Spain provided proof of the effectiveness of aPNS and promoted its execution in the health care sector.

Further, a study in USA established that aPNS was effective in preventing HIV infection and thus controlling the spread HIV, resulting to reduced related morbidity and mortality (GOLDEN *et al.*, 2003). Notably, on a global scale, studies focused on the benefits as well as effectiveness of the strategy but not the determinants of aPNS.

Findings from an aPNS program in Cameroon indicated identification of one new case of HIV in every 3.2 index cases interviewed (Henley *et al.*, 2013). Results from a randomized controlled trial inside an STI health center in Malawi showed a two-fold increase of the numbers of sexual partners testing for HIV as a result of aPNS compared to customary HTS practices; with less than 50% of these partners identified to be to HIV positive (Brown *et al.*, 2011). Hence, in both reports, aPNS was recognized to be safe and effective. These studies provided initial indication that aPNS can be used effectively in the fight against HIV if properly executed in Sub-Saharan Africa. However, large scale implementation in well-designed studies was required before scaling up of aPNS to public health levels. Notably, these studies conducted in Sub-Saharan Africa did not investigate the determinants of aPNS.

In Kenya, a cluster-randomized trial that assessed the efficiency, cost-effectiveness, and feasibility of HIV aPNS across a variety of settings was conducted in 2016. In the study, 18 clusters were randomly allocated to delay and immediate HIV aPNS uptake arms and follow up was done six weeks post admission. The study found that 67% of sexual partners had tested for HIV in the immediate, while 13% had tested for HIV in the delayed arm. Out of the sexual partners identified as HIV positive; 23% had recent HIV diagnosis in the immediate group in relation to 4% in the delayed group. According to the study, those in the immediate aPNS cohort were 15 times more expected to have been tested for the first time and five times expected to be newly

diagnosed with HIV. The study depicted a larger effect on testing uptake due to high levels of testing in the intervention arm compared to low testing in the control arm (Cherutich *et al.*, 2017). According to a study on characteristics of index clients accessing aPNS, immediate follow up was more efficacious than delayed follow up. Further, the study indicated that higher rates of companion HIV testing were also recorded among index participants in countryside/peri-urban in relation to urban sites, female compared to male index participants and those who were less than 30 years. In addition, findings indicated that provision of the aPNS to female index participants also had an expressively higher HIV case finding rate compared to male index participants (Masyuko *et al.*, 2019). A qualitative study in Kenya also revealed that aPNS uptake faced various barriers which included fear that disclosure of HIV status to spouses would result to loss of trust, blame and violence. Other barriers such as humiliation and discrimination were also cited in the health care setting, in church and within general society. Additionally, other obstacles included cultural barriers as well as differences in education level (Monroe-Wise *et al.*, 2019).

1.2 Statement of the Problem

In accordance with the Kenya Population-based HIV Impact Assessment (KENPHIA) report 2019, the national HIV prevalence rate was determined at 4.9% with women disproportionately affected at 6.6% compared to men at 3.1%. Despite continuous decline in HIV prevalence within the adult population aged 15-49 years over time, the said decline has been modest since 2010. Additionally, among adults (15-64 years) knowledge of HIV status stood at 79.5% hence indicating that public health efforts were required to identify people with undiagnosed HIV infection. Further, the HIV epidemic in Kenya is geographically diverse with Siaya county (15.3 %), Homabay (19.6%) and Kisumu county (17.5%) recording high HIV prevalence rates (NASCO & MOH, 2020).

Kisumu County has made several gains in HIV response through the biomedical, structural and behavioral interventions undertaken. However, according to Kenya

Estimates Report in 2018, despite the mentioned gains, Kisumu County still accounted for a significant proportion of the new infections; out of the estimated total new infections (52,800), Kisumu County accounted for 8% (4,012) (NASCOP & MOH, 2020).

Regarding HIV case finding, the initial standard of care was passive referral where HIV positive individuals were encouraged to disclose their status to their partners. However, the limitations of this technique led to the execution of aPNS. Research has revealed the success of aPNS through enhanced HIV testing and connection to care. However, the available limited studies done by Otieno in 2018 and Jerop in 2016 focused on linkage to care but not determinants of the aPNS. Thus, in order to address the gap left by these studies and also to reach the UNAIDS 95-95-95 targets by 2030, there was need to understand the determinants of the aPNS. Therefore, examining determinants of aPNS, preferred methods and barriers provided insights into best practices to help in scaling up and proper implementation of the strategy.

1.3 Justification of the study.

In view of the continued high prevalence and new infection rates in Kisumu County, investigation and investment in public health approached that avert the transmission chain remains vital. The targeted case finding strategy (aPNS) is a public health approach that provides HIV testing to individuals with sexual exposure to HIV and are at risk of infection and disease. However, previous reports have established that some individuals refuse HIV aPNS owing to shock and disgrace about HIV diagnosis, mistrust of public health services and fear of notifying partners (Brown *et al.*, 2011; Edelman *et al.*, 2014). Further, several findings have indicated that clients and providers preferred passive referral (Carnicer-Pont *et al.*, 2015; Roberts *et al.*, 201; WHO, 2016c) while other studies showed that clients preferred assisted approaches (Dalle Nogare *et al.*, 2014; Levy & Fox, 1998; Mimiaga, Fair, *et al.*, 2008; Wayal *et al.*, 2012). Therefore, there is need to determine barriers and preferred methods of aPNS in the Kenyan context and especially in Seme and Kisumu West Sub Counties in order to

guide the implementation process.

The findings from this study would benefit the health sector, HIV implementing partners and stakeholders as well as other development partners by providing an implementation reference point. Additionally, the findings would be helpful to HTS providers towards development and implementation of targeted aPNS programs at the clinic, sub county, county and national levels across the country to improve access to aPNS. The study findings would also provide an addition perspective and be fundamental in designing aPNS programs in the country. Further, the said findings would be a point of reference by other researchers and scholars interested in this subject matter (aPNS).

1.4 Objectives.

1.4.1 Broad Objective:

To examine determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu West sub counties.

1.4.2 Specific objectives:

1. To determine the preferred method(s) of assisted partner notification services among HIVinfected adults on HIV care in Seme and Kisumu West sub counties.
2. To determine barriers of assisted partner notification services among HIV infected adults on HIV care in Seme and Kisumu West sub counties.
3. To establish the association between socio-demographic characteristics of individuals on HIV care and uptake of assisted partner notification services in Seme and Kisumu West sub counties.

1.5 Research questions:

1. What is/are the preferred method(s) of assisted partner notification services among HIV infected adults on HIV care in Seme and Kisumu West sub

counties?

2. What are the barriers of assisted partner notification services among HIV infected adults on HIV care in Seme and Kisumu West sub counties?
3. What is the relationship between the socio demographic characteristics of individuals on HIV care and participation of assisted partner notification services in Seme and Kisumu West sub counties?

1.6 Scope of the study.

The study focused on adults who were 18 years and above in Kisumu county. Additionally, the study was restricted in Kisumu County because of homogeneity of participants.

1.7 Limitations of the study.

The study was limited to Kisumu County in order to achieve homogeneity of the respondents. However, it would have been prudent to cast the net wider in order to examine the prevailing circumstances in a region like Homabay County which has a higher HIV prevalence rate compared to Kisumu County.

CHAPTER TWO

LITERATURE REVIEW.

2.1 Introduction.

This chapter contains the theoretical review used in the study, conceptual framework and empirical literature.

2.2 Theoretical Framework.

2.2.1 aPNS.

A global appraisal of the HTS policy environment indicated variations among countries, with some having put in place aPNS protocols while others had not. The appraisal found that two-thirds of countries did not have aPNS policies, while others had some form of mandatory partner notification systems. However, most countries accepted and recognized this strategy. It was thus emphasized that in order for countries to attain the UNAIDS 95-95-95 targets, incorporation of aPNS in their HIV testing guidelines was critical.

According to WHO (2016) aPNS should be subject to consenting and should be made to index clients' partner(s) alone, and no one else. Additionally, the method varies by population, age and type of partner. Recommendations to offer HTS to partners of all persons identified with HIV have been in place since 2012 (World Health Organization, 2015a). In 2016, WHO dispensed a significant recommendation on the inclusion of voluntary aPNS as a component of comprehensive methods towards improving HIV case finding in HTS programs. According to WHO, (2016) based on the prevailing randomized controlled trials and observational studies, limited cases of restrictions following aPNS guidelines have been reported although issues related to discretion and voluntary participation are key Globally, countries such as USA, Canada and Singapore came up with regulations surrounding aPNS in order to encourage disclosure of HIV

status. According to Hogben *et al.* (2007) this policy direction led to adoption of obligatory aPNS as an imperative HIV prevention strategy. Kumar *et al.* (2006) and Medley *et al.* (2004) suggests that in Africa, passive referral was the most preferred method though it had minimal success due to limitations such as privacy protection and apparent lack of support from the community as well as the political front.

However, according Brown *et al.* (2011) in their study on effectiveness of aPNS in Sub-Saharan Africa, there was evidence of usefulness of aPNS, it's feasibility as well as acceptability. Additionally, the Malawi based study compared patient referral, provider and contract referral methods of aPNS. The study findings established that provider referral was more feasible and effective compared to other techniques.

In the Kenyan perspective, aPNS has been integrated into the routine HTS program although it is still on voluntary basis. Cherutich *et al.* (2017) through their cluster randomized trial in Kenya, found out that aPNS is safe, increases HIV testing and its implementation would enhance linkage to care.

2.3 Conceptual framework.

The conceptual framework was guided by literature review. Determinants of aPNS included socio demographic characteristics, barriers and preferred methods as indicated below.

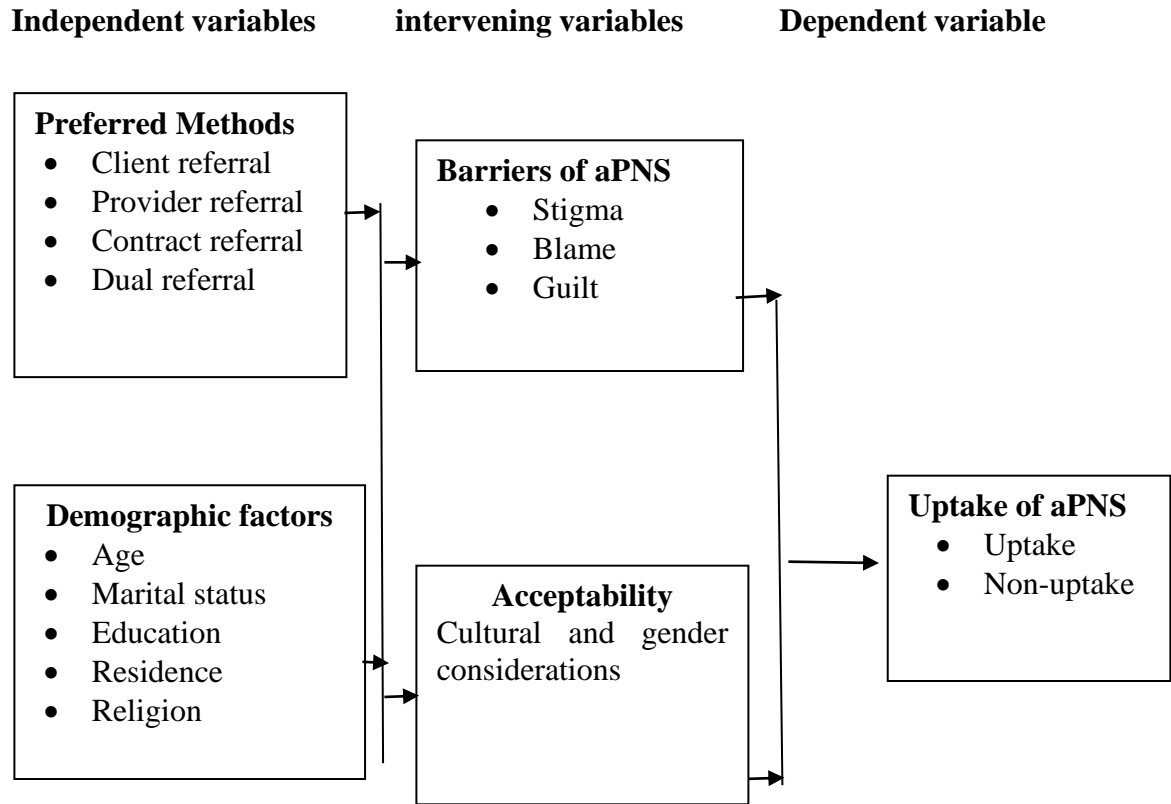


Figure 2.1: Conceptual framework as derived from literature review (Anangwe, 2018)

2.4 Empirical Review.

2.4.1 Preferred HIV aPNS Approaches and Contact Referral Methods.

2.4.1.1 Classification of referral methods of aPNS.

There are four main methods through which aPNS can be implemented i.e. provider, contract dual and client referral methods.

Provider referral: In the context of this referral method; with the consent of the HIV-positive index client, the HTS counselor/provider directly contacts the client’s partner(s), informs them that they have been exposed to HIV, and offers them voluntary HTS while maintaining the confidentiality of the index client.

Contract referral: In the context of this referral method; the index client enters into a “contract” with the counselor and/or health care provider whereby he or she agrees to disclose their HIV status to their partner(s) and refer them to HTS within a certain time frame. Thus, in the event that partner(s) do not access HTS within the agreed period, HTS counselors/providers contact the partner(s) directly to notify them that they may have been exposed to HIV. Importantly, HTS counselors/providers offer voluntary HTS to partner(s) while maintaining the confidentiality of the index client.

Dual referral: In the context of this referral method; HTS counselors/providers sit with the HIV-positive client (index client) and his/her partner(s) to provide support as the client discloses his/her HIV status. The provider also offers voluntary HTS to the partner(s).

Client referral: In the context of this referral method; the index client takes responsibility for disclosing their HIV status to partner(s) and encouraging partner(s) to seek HTS. This is often done using an invitation letter or referral slip.

Based on literature, no one method of partner notification is universally preferred. The differences in preferences vary by age, partner type and population. According to Carnicer-Pont *et al.* (2015), Roberts *et al.* (2015) and WHO, (2016c) studies, clients and providers preferred passive referral while other studies indicated that clients preferred assisted approaches and the acceptability of provider referral ranged between 11% to 71% (Dalle Nogare *et al.*, 2014; Mimiaga, Tetu, *et al.*, 2008; Wayal *et al.*, 2012). Adams *et al.* (2015) in their study in Barbados found out that, clients preferred contract referral to assisted techniques because it addressed the delay in notifying partners. Further, a qualitative study in Uganda which evaluated theoretical partner notification preferences established that FSWs and fishermen preferred contract or provider referral approaches for notifying non-primary and casual associates, but favored passive referral for their main partners (WHO, 2016c).

Among KPs such as the MSM and FSWs, contract or provider referral methods were perceived protective against impending guilt, violence and stigma (Wayal *et al.*, 2011; WHO, 2016c). A study among people who inject drugs established that outreach assistance was the preferred method of notifying partners. According to WHO, (2016), there are numerous approaches through which passive aPNS can be delivered. Passive methodologies result into post-test counseling, where the counselor encourages the freshly diagnosed person to reveal their status to all partners, or by giving a recommendation letter, appointment card or other written or electronic invitation. Further, the report noted that aPNS means could comprise of face-to-face discussions, letters, phone calls, text messages, videos, emails and internet-based messaging systems. Confidentiality and anonymity should be maintained when using phone calls or messages to enhance safety and avert IPV.

Furthermore, Doull *et al.* (2015) established that young people preferred alerting partners through internet applications and text messages compared to KPs such as MSM than other groups, especially in the context of lack of adequate contact information for their sex companions (Mimiaga, Fair, *et al.*, 2008; Wayal *et al.*, 2011). In both general and key population's, preferred methods differed depending on the kind of partner and relationship. Carnicer-Pont *et al.* (2015) established that according to MSM, notifying the casual partners and associates via technologies such as text message, e-mail, the internet and mobile applications was deliberated tolerable. In Canada, clients accessing STD screening and treatment services and had multiple sexual partners favored e-mail or text message alert methods (Gilbert *et al.*, 2015). Other studies in Singapore and the United States showed that individuals preferred face to face alert over the telephone or using text message options (Tan & Chio, 2015).

According a study in Malawi, the provider aPNS referral method was not preferred, but widely accepted and could complement the passive method of notification. The study also recommended couple counselling (Kamanga *et al.*, 2015). Further, a review of literature indicated that there was insufficient evidence to determine the most effective components of an enhanced patient referral strategy, as well as few trials to allow

consistent conclusions regarding effects of provider, contract or other patient referral methods (Ferreira *et al.*, 2013). A study on effectiveness of provider referral established that provider referral was found to be effective in high prevalence populations (Hogben *et al.*, 2007). Other studies have also recommended that provider referral may be mainly valuable for notifying non-primary partners (Carnicer-Pont *et al.*, 2015; Roberts *et al.*, 2015; Wayal *et al.*, 2012; WHO 2016b, n.d.).

2.4.1.2 HIV Testing Service uptake among Partners of HIV-Positive Clients.

It is thus documented that aPNS can enhance uptake of HTS among the sexual partners of HIV infected individuals. Provider referral method depicted high uptake of HIV testing compared to patient referral as was found in a randomized trial on recruiting male partners for Testing in Malawi which established that Couple Testing services improved through invitation and tracing as opposed to invitation only (Rosenberg *et al.*, 2015). Moreover, according to a study on partner notification in Malawi, aPNS increased uptake of HIV testing. The study compared contract referral to passive referral methods. It showed that aPNS uptake using contract referral resulted in a two-fold increase in HIV test uptake among the partners of HIV-positive individuals compared with passive referral approach (Brown *et al.*, 2011).

In keeping with a cluster randomized controlled trial in Kenya, aPNS increased case finding and linkage to HIV care (Cherutich *et al.*, 2017). Global sensitivity analyses using only partners who could be located as the denominator had similar findings. Similarly, across all six observational studies, aPNS was associated with increased uptake of HTS among partners who were notified compared with passive referral (Feldacker *et al.*, 2015; Henley *et al.*, 2013; Myers *et al.*, 2016; Plotkin *et al.*, 2016; Sabidó *et al.*, 2012; Thorpe *et al.*, 2012). Two randomized controlled trials in Malawi established that the difference in notification rates between passive and provider referral methods became more prominent over time. During the initial week after HIV infection diagnosis of index clients, similar numbers of sexual partners in both passive and assisted approaches returned to clinics for HTS. On the other hand, after the initial

week, provider-assisted methods yielded higher numbers of partners returning for HTS than passive referral (Brown *et al.*, 2011; Rosenberg *et al.*, 2015). This provided indication of the effectiveness of aPNS towards enhanced HIV case finding. Findings from a Tanzanian study showed that, 93% of HIV-positive persons favored passive approaches/methods over contract or provider referral. Further, among partners who were notified this way, 96% (232/242) acknowledged testing, while 100% (7/7) accepted testing with aided approaches (Plotkin *et al.*, 2016). Additionally, findings from the cluster randomized controlled trial in Western Kenya, Nairobi and Central Kenya, which compared a delayed and an immediate provider-assisted method, exhibited substantial escalations in uptake of HTS in the immediate arm (Cherutich *et al.*, 2017).

2.4.1.3 HIV Testing Services uptake with Passive Referral.

Findings from studies have demonstrated that aPNS approaches increase uptake of HIV test among notified partners (Feldacker *et al.*, 2015; Henley *et al.*, 2013; Plotkin *et al.*, 2016; Sabidó *et al.*, 2012; Thorpe *et al.*, 2012). According to studies by Feldacker *et al.* (2015) and Plotkin *et al.* (2016); sexual partners' testing and linkage to care improved due to passive referral. Conversely, other study findings depicted very low HTS uptake due to the passive referral groups as a result of low execution of aPNS reporting (Thorpe *et al.*, 2012). Other studies revealed that, passive referral led to an increase in HIV testing among partners by between 2% to 65% (Brown *et al.*, 2011; Feldacker *et al.*, 2015; Plotkin *et al.*, 2018; Rosenberg *et al.*, 2015; Sabidó *et al.*, 2012).

2.4.1.4 New HIV Diagnoses among Partners of HIV-Positive Clients.

The strategic aPNS initiative resulted into increased rates diagnosis of recent HIV infections and thus important in reaching the UNAIDS 95-95-95 targets by 2030. According to Brown *et al.* (2011), Cherutich *et al.* (2017) and Rosenberg *et al.* (2015) the proportion of partners of people living with HIV was high.

Additionally, Brown *et al.* (2011) conducted a study in Malawi and evaluated the

proportions of spouses who tested HIV-positive, then compared contract referral with passive referral. Their study established that aPNS through contract referral led to a higher proportion of HIV-positive partners compared with passive referral. According to Feldacker *et al.* (2015), Myers *et al.* (2016), Plotkin *et al.* (2016), Sabidó *et al.* (2012) and Thorpe *et al.* (2012), majority of the partners of HIV positive clients had seroconverted. Moreover, other studies on key populations such as the MSMs established a high case finding rate among partners testing for HIV (Lin *et al.*, 2012; Thorpe *et al.*, 2012).

2.4.1.4 Values and Preferences of aPNS

2.4.1.4.1 Values and Preferences of aPNS among KPs

Studies on aPNS and key populations indicated challenges such as unwillingness to pinpoint partners (Carballo-Diequez *et al.*, 2002). According to Tsega *et al.* (2012) this also happened among general population especially those with casual partners. A study in the U.S. among MSM established that provider referral protected against violence and stigma (Wayal *et al.*, 2011). Similarly, a study in Peru among MSM and transgender women established that, acceptance and significance of aPNS was high even for those with casual partners (Segura *et al.*, 2013). According to a study in Singapore, MSM preferred the use of email for notification than the heterosexual respondents (Tan & Chio, 2015). Additionally, a study amongst female sex workers (FSWs) in Guatemala established that aPNS was accepted and the most desired notification method was passive referral (Sabidó *et al.*, 2012).

A qualitative study on morals and preferences of aPNS in Uganda carried out sixty-three in-depth interviews with twenty health care givers and forty community associates primarily targeting KPs such as sex workers, fishermen and health care providers. The study established that in accordance to health care providers, passive referral is most effective for married couples or those in close intimate relationships. Mainland community members felt contact referral was also suitable for married

couples. Provider referral was preferred for individuals with multiple, casual companions and was highly satisfactory among sex workers and fishermen (Payne *et al.*, 2017). Hence, providing aPNS to KPs may require more intensively focused efforts to locate partners, including and not limited to the assurance of discretion and anonymity for the HIV infected index clients.

2.4.1.4.2 Value and Preferences of aPNS among Adolescents and Young People.

A few studies have assessed aPNS amid young people. A study in Singapore recognized that significantly, more adolescents and young people who were under 30 years of age favored notifying their partners through text messages (Tan & Chio, 2015). A qualitative study in Canada revealed that mature adults favored using online methods like e-mail, whereas youthful people favored mobile phone text messaging. Both groups selected their method of preference and seriously believing it to be trustworthy (Doull *et al.*, 2015). Furthermore, another study conducted in Canada established that, online services fascinated to the needs of young people as an outcome of suitability and privacy. Additionally, online services were believed to reduce anxiety compared to face-to-face alerts (Shoveller *et al.*, 2012). The findings from these studies released some significant aspects to contemplate while establishing aPNS programs, in order to safeguard the methodologies embraced by the groups being targeted.

2.4.2 Barriers to aPNS.

Synonymous to other health services and public health interventions, aPNS experiences barriers that are critical to note and address to enhance effective implementation on public health scale. The said barriers exist at multiple levels within the public health system. Therefore, establishment of continued barriers' remedial action is critical in execution of aPNS with fidelity.

Whereas aPNS is gaining acceptance in Kenya, various studies have found a number of barriers to the uptake of the strategy. According to Goyette *et al.* (2016), time to

process the test results, lack of trust in health care workers to maintain confidentiality and lack of community awareness about aPNS may result to individuals feeling less comfortable eliciting partners. Examining and understanding the barriers to the uptake of aPNS in sub-Saharan Africa is important to inform scale up. Further, Goyette *et al.* (2016) in their qualitative study explored client, community, and healthcare worker barriers to aPNS within a cluster randomized trial of aPNS in Kenya. During the study, twenty in-depth interviews were conducted with clients who declined enrollment in the aPNS study. Further, nine focus group discussions were conducted with health advisors, HTS providers, and the general HTS client population. Two analysts coded the data using an open coding approach and identified major themes and sub themes. A significant proportion of participants required more time to process an HIV-positive result before eliciting their sexual partners. Lack of trust in the HTS providers resulted to fear of confidentiality breach among numerous participants, which increased the fears of stigma in the community and relationship conflicts. The relationship type influenced the decision to elicit sexual partners. Additionally, the lack of community level understanding of aPNS contributed to the discomfort in enrolling in the study. The study therefore concluded that establishing trust between the clients and providers may increase uptake of aPNS in Kenya. A client's decision to elicited partners may depend on the type of relationship he or she is in, therefore alternative methods of disclosure may need to be offered to accommodate different contexts. Additionally, demand creation and enhancing awareness about aPNS in the community may make clients more comfortable providing partner information.

2.4.2.1 Client/individual level barriers.

In hypothetical circumstances, notwithstanding strong motivations, 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 impede them from notifying their partners for aPNS (Adams *et al.*, 2015; Carnicer-Pont, Barbera-Gracia, Fernández-Dávila, García de Olalla, *et al.*, 2015; Roberts *et al.*, 2015; Wayal *et al.*, 2012).

However, to date, these worries have not been borne out by aPNS during implementation as they have been executed and conveyed on in the scientific literature. An additional stated obstacle to alerting partners was not knowing a mate, not having their contact information, or not being able to find them. These explanations were declared as obstructions to alerting non-primary and casual partners (Carnicer-Pont, *et al.*, 2015 & WHO, 2014a) and possibly will mostly distress KPs and their readiness and capacity to alert spouses (Carballo-Diequez *et al.*, 2002).

2.4.2.2 Health care worker level barriers.

Health care worker level barriers include but were not limited to; inadequate skill to implement aPNS, inadequate resources i.e., call back system, transport to support aPNS and as well as time constraints amidst competing duties.

2.4.2.3 System barriers.

System barriers to aPNS included but were not limited to; inadequate supervision structures for aPNS implementation, legal barriers, structural and policy barriers and inadequate resources to support aPNS implementation (Theodore M. Hammett *et al.*, 2018).

2.4.2.4 Population specific barriers.

The main aim of providing HTS is to deliver a diagnosis and effectively accelerate access to and uptake of HIV prevention, treatment and care. These crucial interventions have the potential to decrease HIV spread and HIV-associated morbidity and mortality (UN, 2016c; WHO, 2014, 2014a, 2016a; WHO 2016b, n.d.). During the preceding decade, the global scale-up of HTS had been considerable. In 2005 it was projected that only 10% of PLHIV in Africa were conscious of their HIV status and that, worldwide, only 12% of people who sought to test for HIV were capable to. In distinction, in 2015 it was projected that 54% of all PLHIV in Africa and 60% in the worldwide were aware their status (UN, 2016b; UNAIDS REFERENCE, 2015) and that more than 600 million

persons received HTS in 122 low- and middle-income countries in the years 2010–2014 (WHO, 2016). Regardless of this success, a significant testing gap still existed. According to latest approximations, 78% of all persons diagnosed with HIV are on ART; nevertheless, 40% of all PLHIV still remain undiagnosed (UN, 2016c). Furthermore, in the face of the yearly escalations in HIV testing coverage in many locations, HTS and specifically aPNS is not satisfactorily implemented. Many of those at risk of HIV infection, such as men, spouses of PLHIV, adolescents and young people in high HIV burden locations and KPs worldwide still remain unreached (WHO, 2016a).

2.4.3 Linkage to HIV Care and Treatment among Partners of HIV-Positive Clients

Compared with passive referral, aPNS can increase connection to care. Brown *et al.* (2011) and Cherutich *et al.* (2017) established that connection to care of HIV-positive partners was more than three times greater in the provider referral arm than in the passive arm. According to Rosenberg *et al.* (2015) in their study conducted in Malawi, associates of the recently diagnosed HIV infected persons who received provider referral support were more expected to have a medical valuation within one month than those who received passive referral. Thus, this finding implied that provider referral was more effective than passive referral. Furthermore, other studies also stated that a high proportion of companions newly diagnosed with HIV were linked to care (Feldacker *et al.*, 2015; Henley *et al.*, 2013; Myers *et al.*, 2016; Plotkin *et al.*, 2016).

Early and effective diagnosis as well as initiation on ART for PLHIV is an important HIV prevention initiative for the population that is not infected with HIV. This is because HIV transmission among PLHIV on ART is significantly reduced due to viral suppression benefits of effective treatment (Cohen *et al.*, 2011; WHO, 2012a). One recent study found that, people on treatment were 96% less likely to transmit HIV to their partners than people not on treatment (Cohen *et al.*, 2011). This emphasizes not only the need for the strategic use of treatment, but also amplifies the importance of early and increased testing, especially amongst at-risk groups, to break the chain of

transmission.

2.4.4 Social harm following aPNS.

Regarding social harm, both passive and/or assisted methods have yielded into sporadic cases of adverse and social harm. However, concerns still remains about the conceivable harm that could result from disclosure of HIV-positive status, particularly for KPs and other susceptible groups. Worries about social harm are of particular concern in circumstances where certain behaviors related with HIV infection are outlawed (Low *et al.*, 2013, p. 20; Wamuti *et al.*, 2015) and antagonistic events have actually been measured, although few have occurred (Brown *et al.*, 2011; Cherutich *et al.*, 2017; Rosenberg *et al.*, 2015). Thus, according to Cherutich *et al.* (2017) and Rosenberg *et al.* (2015) studies, reported cases of social harm were few and were not linked to aPNS. Based on a study in Mozambique, cases of abandonment by partners due to notification were reported and some resulted to loss of financial support (Myers *et al.*, 2016). Therefore, in implementing aPNS, it is important to reflect on the possible social harm that may result due to the strategy and balance with the need to harness the benefits of the strategy.

2.4.5 Cost and cost-effectiveness of aPNS.

The prospective cost of implementing HIV aPNS is a concern for policy-makers since tracing and contacting companions' needs training and extra health providers' time and health system resources. Generally, studies recommend HIV aPNS can be cost-effective. According to a study in Europe, HIV aPNS was established to be cost-effective, with the Incremental Cost Effectiveness Ratio assessment more favorable. Thus, aPNS is cost effective in combating HIV spread. A study in USA estimated that aPNS of estimated 113 infected clients prevented another 1.2 HIV infections and saves U.S. \$18,100.00 (Varghese *et al.*, 1999). According a study in Malawi, aPNS had a higher incremental cost effectiveness ratio for contract referral and provider referral of about U.S \$ 3,560.00 per HIV spread prevented and U.S \$4,106.00 per HIV spread

averted respectively. Further, according to a study in Western Kenya, aPNS was also found to be cost effective in preventing mortality and morbidity due to HIV (Sharma *et al.*, 2018).

Thus, aPNS costs differ greatly due to alterations in the unit costs of health care resources, the service provision method, and in specifically the type of employees used in service execution. It is significant to note that in high prevalence regions program expenses may be higher than those in low prevalence locations since more locating and alerting services will be needed. However, since these services are likely to identify new HIV infections in need of ART, they have the possibility to be cost-effective. Therefore, programs should evaluate on the suitable cost-effective approaches to implementation of aPNS (Armbruster *et al.*, 2011; Armbruster & Brandeau, 2007a; Armbruster & Margaret L Brandeau, 2007b).

2.4.6 Mitigating risks and protecting against potential harm.

Qualified health providers are tasked to be able to give support and counseling to HIV infected clients and their partners that they contact. The weight ought to be on supporting and encouraging revelation of HIV status, when it is safe and helpful, and the importance of associating to HIV prevention, treatment and other applicable services. Health providers who identify sero-discordant partners should encourage mutual revelation in a process that is assisted by those experienced in couples'/partners' counseling. It is vital that accurate information is availed to HIV-positive spouses on the benefits of retention to treatment. On the other hand, prevention possibilities such as PrEP, condoms, and voluntary medical male Circumcision (VMMC) should be deliberated on with HIV uninfected companions, so as to curb onward HIV spread. Health providers should be particularly cautious to safeguard client discretion, in the occasion that partners have not disclosed their HIV status to one another (WHO, 2012b, p. 201).

Health workers should determine which clients may be at risk of social harm or

physical violence. Numerous screening tools for IPV are obtainable to enhance integration of IPV screening, management and referral in the context of aPNS. In addition, recommendations for in-depth counseling and access to helplines and highly secure locations may be essential in case violence breaks out. In discussion with the client, the threat of harm should be evaluated by the health providers to determine which aPNS approach is most suitable, including more supportive possibilities such as dual recommendation or couples HTS, or whether not to continue with companion notification at all (WHO, 2013b).

2.4.7 Implementation considerations for success.

When implementing aPNS, it is essential to explore all the elements that are necessary for a prosperous program, comprising and not limited to training of health providers; context- appropriate service delivery prototypes; methods to facilitate linkage to prevention, treatment, care and support; and the immediate legal and strategy environment.

To capitalize on the gains of aPNS, multiple service delivery platforms should be obtainable. An individual may not be ready to disclose their status or the identity of their partner(s) when first diagnosed with HIV infection. Therefore, once an individual enrolls into care, the health center should re-examine whether the person has disclosed his/her status to all his/her spouses, and if not, aPNS should be offered. These valuations should be recurring after every six months or during annual follow-up visits with individuals, given that a person's readiness to divulge or to approval to aPNS may change over a period as confidence in the health providers increases (UN, 2016a; WHO, 2016; WHO 2016b, n.d.).

2.4.8 Facilitating linkage to prevention, treatment and care.

It is vital for partners of HIV infected clients who are also found to be HIV positive to be connected to timely treatment and care to improve their own health and to inhibit

further HIV spread. Newly diagnosed partners should, in turn, be offered aPNS for all of their sexual partners. In cases where some partners are HIV-negative, they should immediately be

Educated about and linked to appropriate and effective prevention services, such as condoms, VMMC and PrEP (WHO 2016b, n.d.).

Notification services also provide a perfect opportunity to offer partners of HIV infected individuals' additional screening and testing services for TB, hepatitis B and C, and other STDs, as well as access to contraceptive services. This method has been found to be mainly effective when locating the household contacts of HIV positive clients to offer joint HIV testing and TB screening. According a study in South Africa, out of 59,458 household members of HIV positive clients who received HIV testing and TB screening, 15.6% were found to be HIV infected. Nearly all HIV infected persons identified also received TB symptom screening, and 21.4% had symptoms of TB (Manjezi *et al.*, 2016).

2.5 Research Gap.

The available studies conducted with regards to aPNS focused more on the outcomes but not strategies to help in the implementation of aPNS with fidelity. The aftermath of such studies has some gains made against the spread of HIV but not to the desired results. With HIV prevalence in Kisumu still at 17.5%, there is an urgent need to focus on strategies used on aPNS, enhance implementation and curb the chain of community level transmission of HIV.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction.

This chapter deals with methodology including study site, research design, target population, and sample size. Also captured in this chapter are data collection instruments and procedure, validity and reliability as well as data analysis methods.

3.2 Study Site.

Kisumu County.

Kisumu County is one of the 47 Counties in Kenya. It lies within longitudes 33° 20'E and 35° 20'E and latitudes 0° 20'South and 0° 50'South. The County is bordered by Homa Bay County to the South, Nandi County to the North East, Kericho County to the East, Vihiga County to the North West and Siaya County to the West. The County covers a total land area of 2,086 km² and another 535 km² covered by water Kisumu County Development Plan, (2017). Kisumu County is approximately 355.1 kms from Nairobi County.

3.2.1 Seme and Kisumu West sub counties.

The area of study was selected purposively because it covers the demographics surveillance area that is in Seme and Kisumu West sub counties. Seme and Kisumu West sub counties are located in a rural part of Kisumu County, western Kenya, and cover an area of about 369 km² stretching along the north-eastern shores of Lake Victoria. The two sub counties also host the United States Army Medical Research Unit- Kenya (USAMRU- K) demographic surveillance area (DSA) which is about 40 km west of Kisumu city; the administrative capital of Kisumu County, and borders Gem sub county to the west and northern parts. Seme sub county is host to the Kombewa DSA

which lies between longitudes 34 0 24'00" E and 34 0 41'30" E, and latitudes 0 0 11'30" to N-0 0 11'30" S, at an average altitude of 1400 m above sea level. The area has a total of 37 sub-locations and 357 villages based on mapping work done by DSA from 2008 to 2010.

The Kombewa Clinical Research Centre (CRC), located at the heart of the USAMRU-K DSA area, is surrounded by 24 functioning health facilities, 20 of which are government and 4 private or faith-based organizations. The various health facilities are graded between levels two and three, depending on the services offered. Level-two facilities are staffed with nurses and clinical officers and offer basic curative and preventive services including reproductive health services. Level-three facilities are the first referral points and offer a wider range of curative and preventive services including inpatient care, laboratory services, accident and emergency services, training as well as technical supervision to level two.

According to Kenya National Bureau of Statistics (KNBS) report of 2017, Kisumu County poverty levels contributed to 1.7% of the national statistics. Absolute poverty in Kisumu County stood at 60% with food poverty at 61%. Urban poverty was determined at 70.5% while rural poverty was at 63%. The agricultural sector was the leading source of employment in Kisumu County at 47% followed by waged employment at 17%. Rural self-employment stood at 10% while urban self-employments was 11%.

Table 3.1: Population per constituency/sub-county.

Constituency	Area (KM²)	Population
Kisumu West	212.9	131,246
Seme	190.2	98,805

Table 3.1 shows area covered by Kisumu west Sub County and Seme Sub County. The table also indicates population of each Sub County.

Table 3.2: Population projection and projection by constituency.

Sub County	2009 Census Population	2018 (Projected) Population	2020 (Projected) Population	2022 (Projected) Population
Kisumu West	131,246	165,872	174,738	184,065
Seme	98,805	124,872	131,547	138,568

Source: economic council of governors of Kenya 2018.

Table 3.2 shows population projection for Kisumu west constituency and Seme constituency for the period 2018 to 2022.

3.3 Study Design.

The study adopted a descriptive cross-sectional research design. The descriptive study design enabled the researcher to gain understanding of the accurate portrayal and/or account of the characteristics of study participants in their real-life situations. This was for the purposes of defining and discovering new meaning, describing existing characteristics, determining frequency of occurrence of variables of interest and categorization of information for purposes of analysis.

3.4 Study population.

Target population of the study was 9,942 individuals on HIV care from which a suitable sample was drawn for the study.

3.4.1 Sample size determination.

Kish Leslie (1965) formula, recommended for cross-sectional studies, was used to determine the sample size.

$$\text{Sample size (ss)} = \frac{Z^2 \times p \times (1-p)}{d^2}$$

Where:

Z= Z value (e.g., 1.96 for 95% confidence level)

P= percentage picking a choice, expressed as a decimal (0.5 used for sample size needed)

d= maximum tolerance error which is 95% with an error of 5% which equals to 0.05

$$n = \frac{(1.96)^2 \times 0.50 \times 0.50}{(0.05)^2}$$

Sample size = 385 respondents.

This was adjusted by 10% to take care of errors and non-response therefore:

$$n = 385 + 38.5 = 423.5$$

$$n = 423.$$

The sample size for the study was **423**.

3.4.2 Inclusion Criteria.

Clients aged above 18 years attending HIV clinical care in the sampled health facilities in Seme and Kisumu West sub counties and had participated or not participated in the aPNS and were willing to consent to participate in the study.

3.4.3 Exclusion Criteria.

Clients who were below 18 years of age were excluded from the study since they had not attained constitutional threshold to be classified as adults. The study also excluded clients who were not willing to consent to participate in the study.

3.4.4 Variables.

Dependent variable.

Participation in the aPNS.

3.4.5 Independent variables

Social Factors:

Stigma.

Sexual orientation.

Fear of positive test results.

Social norms.

Attitudes.

Social support.

Blame.

Exposure to IPV.

Demographic and Individual factors:

Gender.

Age.

Education level.

Occupation.

Marital status.

Residence.

3.4.6 Others Independent variables included:

Barriers of aPNS.

Different methods of aPNS.

3.4.7 Intermediate variables.

Policy and Legal framework; policies and guidelines, punitive laws/practices and criminalized behavior.

3.5 Sampling.

3.5.1 Sampling Techniques.

Stratified sampling method was used to generate the sample. The sample consisted of 423 participants that is those male and female adult clients registered in HIV care clinics in Chulaimbo Referral County Hospital in Kisumu west, Kombewa County Referral Hospital and Manyanda Sub County Hospital in Seme sub county. These Facilities accounted for a larger proportion of the clients on care in the two sub counties. Sampling was based on the target population of 9,942 individuals as per the population profile of Seme and Kisumu West Sub Counties.

The sample size in each health facility was in respect to the size of the population of individuals accessing HIV care and treatment services in the facilities. The formula below was used to generate the sample size:

$$\frac{\text{Total number of individuals accessing HIV care at facility}}{\text{Total number of individuals accessing HIV care at 3 facilities (9,942)}} \times \text{sample size (423)}$$

For example, the number of individuals accessing HIV care at Kombewa County Referral Hospital was 3,070. Therefore, the total number of study participants to be interviewed in Kombewa County Referral Hospital was determined as below:

$$\frac{3,070}{9,942} \times 423 = 131$$

The same procedure was applied in all the 3 selected health facilities

Table 3.3: Sample size determination by selected study facilities using probability proportion to size (PPS).

The number of study participants was selected by use of probability proportion to size (PPS).

Site Name	Clients (18 years and above)	Probability to Proportion arithmetic	No of Respondent size Sampled per facility	Percentage sampling per facility
Kombewa County Referral Hospital	3,070	$\frac{3,070}{9,942} \times 423 = 131$	131	31%
Manyuanda SubCounty Referral Hospital	1,137	$\frac{1,137}{9,942} \times 423 = 48$	48	11%
Chulaimbo County Referral Hospital	5,735	$\frac{5,735}{9,942} \times 423 = 244$	244	58%
Total	9,942		423	100%

Source: District Health Information Systems (DHIS, March 2019).

At each health facility potential participants were approached as they attended HIV care clinics in the facilities. Simple random sampling was used to select the participants from each facility. The research assistants assigned serial numbers against clients booked for clinical visits per day and wrote the serial numbers on flip ruffle cards. They then mixed them in a ruffle box before randomly picking each card to develop a line list of clients to be approached for consenting to the study on that day. Only clients who accepted to participate in the study were consented. Questionnaires were read out for the participants by the research assistants in the language they best understand-

either English or *Dholuo*. Upon completion of the questionnaires, the respondents' CCC numbers were marked against in the health facility register. The purpose of this was to eliminate the possibility of interviewing the same respondent(s) more than once. Respondents who did not consent to the study continued to receive the routine care as entitled to them from the comprehensive care centers (CCC) within the health facilities.

3.6 Data Management.

3.6.1 Data Collection.

The researcher used structured questionnaires as the main tool for data collection. The selection of this data collection instrument was guided by the nature of data to be collected, time frame and study objectives. Questionnaires had both open and closed ended questions. Trained research assistants administered the questionnaires to the respondents and marked/ticked or wrote statements where appropriate depending on the questions asked.

The researcher engaged research assistants who were trained on the background of the study, objectives, as well as proper data collection methods through conducting a small-scale trial of the data collection instruments (questionnaires). The trial enabled determination of clarity of the questions and whether they elicited the desired information. Selection of research assistants was done from within Kisumu County. The research assistants were selected from the health-related field specifically HTS counselors residing and working within Kisumu County and providing HTS services including aPNS. The said research assistants were HTS counselors holding a diploma in social sciences or any medical related field and trained in HTS and aPNS in a National AIDS and STI Control Program (NAS COP) accredited institution. The research assistants had to be fluent in English and *Dholuo*. The research assistants' duty included; random selection of research participants, consenting as well as administration of the study questionnaire to respondents who agreed to participate in the study.

3.7 Pre-testing of Study Instruments.

3.7.1 Validity and reliability.

Validity and reliability were ensured through pre-testing. This was done at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), which is not part of the study area. Pre-testing was for done in order to check if the data collection tool was accurate. Thus, to ensure reliability and validity the questionnaires were pre-tested on 40 randomly selected respondents aged 18 years and above on HIV care. The pre-test was conducted upon approval by the hospital management (JOOTRH). This enabled determination regarding clarity of questions as well as to identify unacceptable questions. According to Perneger *et al.* (2015) to achieve 80% statistical power, 30 participants were necessary for the pre-test, thus the study randomly selected 40 respondents. The data collected from the pilot test was compared using correlation analysis. Correlation co-efficient of 0.70 and above was considered sufficiently reliable. Corrections and adjustments were made in view of the outcome of the pilot test. However, the data collected during pre-testing of the study instruments was not included into the final data.

The researcher ensured quality control during data collection by the following mechanisms; training of research assistants, reviewing all the questionnaires that have been completed after interviews with respondents and conducting re-training for research assistants on any errors, gaps identified, conducting dry runs/mock interviews with each research assistant once every week to review their interview skills during the data collection period.

3.7.2 Data Entry.

Data collected through hard copy questionnaires was converted into numerical codes representing measurement of the variables for entry into SPSS. Data cleaning was done in STATA version 14.2.

3.8 Data Analysis.

Quantitative data analysis was done using both descriptive and inferential statistics. Frequencies were displayed in tables. Inferential statistics were done using Chi-square test with substitution of fisher's exact test in categories with count less than 5 and binary logistic regression. Data was analyzed using STATA version 14.2. P-values less than (<) 0.05 were considered statistically significant results.

3.9 Dissemination of findings.

Findings of this study were disseminated to the Seme and Kisumu West Sub County health management teams (SCHMTs), the HIV care and treatment program (PEPFAR implementing partner) in Seme and Kisumu West sub counties. Additionally, results were disseminated to representatives from all the facilities in Seme and Kisumu West Sub Counties respectively as well as Jomo Kenyatta University of Agriculture and Technology, department of public health; school of health sciences. Copies of progress reports; the complete final study documents were submitted to Jomo Kenyatta University of Agriculture and Technology, department of public health; school of health sciences as well as Jaramogi Oginga Odinga Teaching and Referral Hospital IERC.

3.10 Ethical considerations.

The researcher obtained certificate of ethical approval to conduct this research study from the ethical approval bodies/IRBs; Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) 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 Manyuanda Sub County Hospital. Further, a letter of authorization to proceed for data collection was obtained from Jomo Kenyatta University of Agriculture and Technology- board of post graduate studies, department

of public health; college of health sciences. Additionally, upon receiving approval from JOOTRH IERC the researcher made an online application for a research permit from the National Commission of Science, Technology and Innovation (NACOSTI) headquarters prior to commencing the study.

The researcher adhered to the ethical principles of beneficence, confidentiality, respect of human dignity, self-respect, respect for respondents' autonomy, fair treatment, protection of human rights and honesty in data processing. Confidentiality and dissemination of information was discussed with the respondents prior to administering the questionnaires.

Respondents were informed that participating in the study was voluntary and they were free to withdraw their participation should they find that necessary. Emphasis was made that their decision to withdraw did not influence/affect the HIV referral; care and treatment services that would be offered to them afterwards in any way. Respondents who consented to participate in the study were then requested to complete consent forms to participate in the study. Unique numbers were used to code questionnaires and consent forms to conceal the identity of respondents participating in the study.

CHAPTER FOUR

RESULTS AND DISCUSSION.

4.1 Introduction.

This chapter presents the results of the study based on the information obtained from the field. The aim of this study was to examine determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu west sub counties. Data collected was analyzed and reported where the results obtained were presented in form of frequency tables, pie charts and bar graphs. This was followed by a brief interpretation and a discussion on research findings. Data analysis was based and guided by the research objectives.

4.2 Response rate

A total of 433 questionnaires were administered to respondents. Of those, a total of 423 questionnaires were returned to the researcher giving a response rate of 97%. According to Saunders et al, (2003) and Mugenda and Mugenda (2003), a response rate of 50% and above is considered acceptable.

Table 4.1: Response rate.

Site Name	Frequency	%
Chulaimbo County Hospital	244	57.7
Kombewa County Referral Hospital	140	33.1
Manyuanda Subcounty Referral Hospital	39	9.2
Total	423	100

Table 4.2: Beneficiary and non-beneficiary of aPNS.

aPNS beneficiary	Frequency N = 423	%	
Yes	296	70	Table 4.2
No	127	30	

shows that out of the 423 respondents, 296 had already benefited from aPNS while 127 respondents had not.

4.3 Preferred method of aPNS.

Table 4.3: Preferred method of aPNS.

Variable/Factor	Total(N)	aPNS non-beneficiaries n (%)	aPNS beneficiaries n (%)	OR (95% CI)	P- value (p<0.05)
Provider referral					
Yes	171 (40.4)	56 (32.7)	115 (67.3)	0.87 (0.57 - 1.32)	0.515
No	252 (59.6)	75 (29.8)	177 (70.2)	Ref	
Contract referral					
Yes	88 (20.8)	28 (31.8)	60 (68.2)	0.95 (0.57 - 1.58)	0.847
No	335 (79.2)	103 (30.7)	232 (69.3)	Ref	
Dual referral					
Yes	89 (21.0)	33 (37.1)	56 (62.9)	0.70 (0.43 - 1.15)	0.162
No	334 (79.0)	98 (29.3)	236 (70.7)	Ref	
Client referral					
Yes	110 (26.0)	27 (24.5)	83 (75.5)	1.53(0.93 - 2.51)	0.092
No	313 (74.0)	104 (33.2)	209 (66.8)	Ref	

Table 4.3 shows that overall; a high proportion (40.4%) mentioned that the preferred method of aPNS was provider referral followed client referral at (26.0%). Contract referral was the least preferred method of referral (20.8%). However, client referral method was the most preferred among those who had participated in aPNS (75.5%)

while dual referral method was the preferred among those who had not benefited from aPNS. However, there existed no statistically difference between different referral methods and participation in aPNS ($p>0.05$).

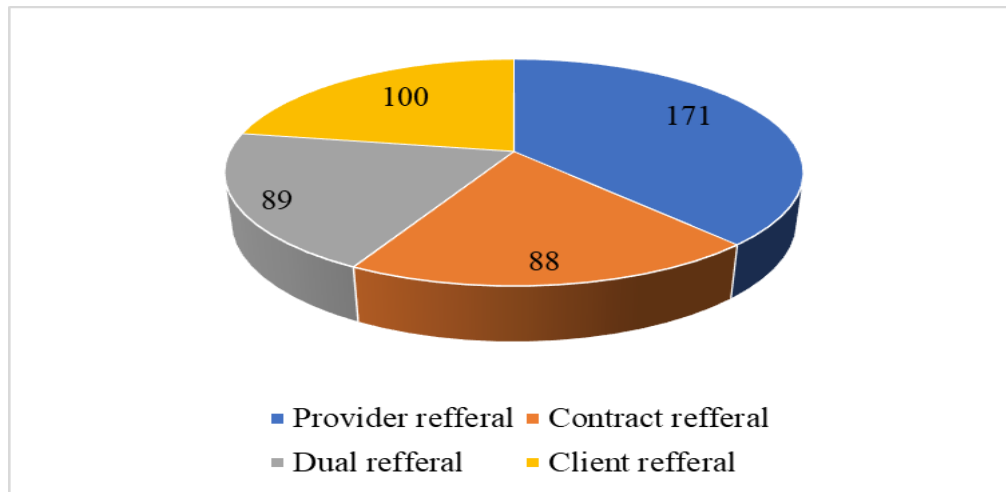


Figure 4.1: Preferred referral methods for aPNS.

Figure 4.3 depicts the distribution of aPNS preferred methods and from the results it shows that majority of the respondents' (171) preferred provider referral method of aPNS, followed by client, dual and contract referral respectively.

4.4 Barriers of aPNS among the study respondents.

Table 4.4: Reasons for not enlisting for aPNS.

Reasons for not enlisting for aPNS	Frequency (n) = 423	%
Stigma		
Yes	127	30.0
No	266	62.9
Missing	30	7.1
Fear of separation		
Yes	118	27.9
No	275	65.0
Missing	30	7.1
Open communication		
Yes	36	8.5
No	357	84.4
Missing	30	7.1
Fear of violence		
Yes	53	12.5
No	340	80.4
Missing	30	7.1
Fear of taking blame		
Yes	80	18.9
No	313	74.0
Missing	30	7.1
Guilt		
Yes	41	9.7
No	352	83.2
Missing	30	7.1

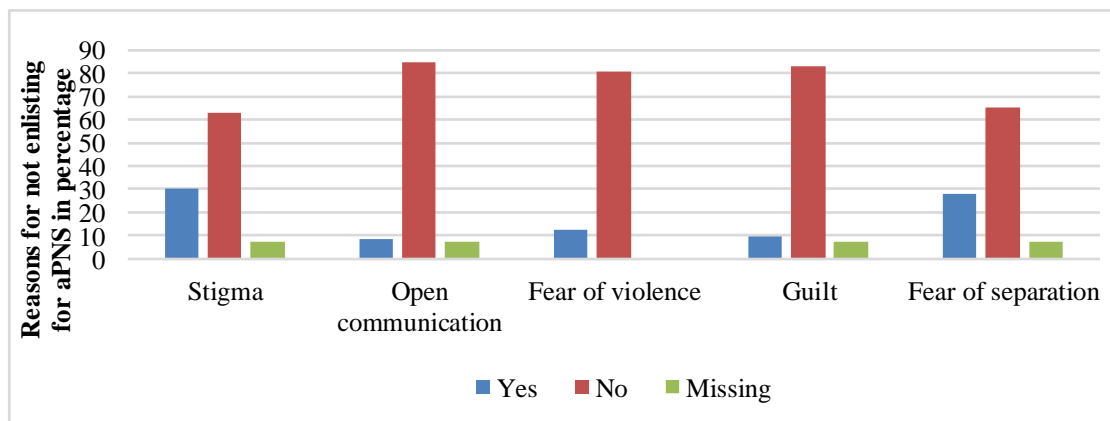


Figure 4.2: Reasons for not enlisting for aPNS.

Table 4.4 and figure 4.4.1 show reasons that respondents enlisted for not opting into aPNS. The results showed that major concerns for not enlisting included stigma at 30%, fear of separation at 27.9% and fear of taking blame at 18.9% respectively.

4.4.1 Association between aPNS and benefits of aPNS among the respondents.

Table 4.5: Association between aPNS and benefits of aPNS among the respondents.

Benefits of aPNS	Frequency N = 423	Non aPNS benefactor	aPNS benefactor	P- Value (p<0.05)
HIV Testing promotes knowledge of HIV status	245 (57.9%)	66 (26.9%)	179 (73.1%)	
Promotes Linkage	42 (9.9%)	14 (33.3%)	28 (66.7%)	
Identifying people with HIV	18 (4.3%)	10 (55.6%)	8 (44.4%)	0.021*
Prevents HIV transmission	64 (15.1%)	26 (40.6%)	38 (59.4%)	
Missing	54 (12.8%)	-	-	

From table 4.5 those who mentioned that HIV testing promoted knowledge of HIV status as one of the benefits of aPNS were 57.9% while 9.9% mentioned linkage to care and 15.1% prevention of HIV prevention. Among those who mentioned HIV testing

and knowledge of HIV status as one of benefits of aPNS, 73.1% were beneficiaries of aPNS while 26.9% were not beneficiaries of aPNS. Among those who mentioned identification of people with HIV as the benefits of aPNS, 55.6% were not beneficiaries of aPNS while 44.4% were beneficiaries. The association between aPNS and its benefits among the respondents had a P- value of 0.021 which is less than 0.05 hence it had statistical level of significance to the study.

Table 4.6: Distribution of barriers and reasons for not listing to aPNS among the respondents.

Barrier	Frequency N = 423	aPNS benefactor	non- aPNS benefactor	Odd ratio AOR (95%CI)	P- value (p<0.05)
Embarrassment					
No	178 (42.1%)	42 (23.6%)	136 (76.4%)	1	
Yes	245 (57.9%)	89 (36.3%)	156 (63.7%)	0.52 (0.31-0.87)	0.013*
Fear of support loss					
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)	0.973
Stigma					
No	193 (45.6%)	45 (23.3%)	148 (76.7%)	1	
Yes	230 (54.4)	86 (37.4%)	144 (62.6%)	0.57 (0.35-0.95)	0.030*
Fear of violence					
No	244 (57.7%)	75 (30.7%)	169 (69.3%)	1	
Yes	179 (42.3%)	56 (31.3%)	123 (68.7%)	1.37 (0.82-2.27)	0.225
Fear of taking blame					
No	270 (63.8%)	81 (30.0%)	189 (70.0%)	1	
Yes	153 (36.2%)	50 (32.7%)	103 (67.3%)	1.16 (0.69-1.94)	0.573
Guilt					
No	307 (72.6%)	85 (27.7%)	222 (72.3%)	1	
Yes	116 (27.4%)	46 (39.7%)	70 (60.3%)	0.68 (0.40-1.16)	0.159
Fear of separation					
No	179 (42.6%)	50 (27.9%)	129 (72.1%)	1	
Yes	243 (57.4%)	81 (33.3%)	162 (66.7%)	0.97 (0.59-1.60)	0.917
Unknown partner					
No	352 (83.2%)	108 (30.7%)	244 (69.3%)	1	
Yes	71 (17.8%)	23 (32.4%)	48 (67.6%)	1.18 (0.58-2.39)	0.653

Table 4.7: Distribution of barriers and reasons for not listing to aPNS among the respondents.

Barrier	Frequency N= 423	aPNS non- beneficiaries	aPNS beneficiaries	Odd ratio AOR (95%CI)	P- value (p<0.05)
Availability of partner(s) contacts					
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
Unwillingness for notification of partner					
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)	0.039*
Power dynamics relationship					
No	361 (85.3%)	109 (30.2%)	252 (69.8%)	1	
Yes	62 (14.7%)	22 (35.5%)	40 (64.5%)	0.99 (0.51-1.94)	0.986
Unfriendly services					
No	385 (91.0%)	105 (27.3%)	280 (72.7%)	1	
Yes	38 (9.0%)	26 (68.4%)	12 (31.6%)	0.06 (0.02-0.18)	<0.001*
Health care workers attitudes					
No	382 (90.3%)	116 (30.4%)	266 (69.6%)	1	
Yes	41 (9.7%)	15 (36.6%)	26 (63.4%)	1.34 (0.49-3.68)	0.565
Confidentiality					
No	337 (79.7%)	105 (31.2%)	232 (68.8%)	1	
Yes	86 (20.3%)	26 (30.2%)	60 (69.8%)	2.06 (0.98-4.31)	0.056
Denial of HIV status					
No	343 (81.1%)	107 (31.2%)	236 (68.8%)	1	
Yes	80 (18.9%)	24 (30.0%)	56 (70.0%)	1.41 (0.72-2.77)	0.315

Table 4.6 and 4.7 shows various barriers of aPNS between those who had participated aPNS and those who had not participated prior to the study being conducted. Majority revealed embarrassment (57.9%) and fear of separation (57.4%) were the most common barriers while unfriendly services was the least (19%).

Multivariate analysis revealed that, aPNS beneficiaries were 48% less likely to mention embarrassment and shame as one of the barriers of aPNS compared to aPNS non-beneficiaries (aOR=0.52; 95% CI, 0.31-0.87, p=0.013*). Moreover, those who had benefited from aPNS were 43% less likely to mention stigma as one of the barriers to

aPNS compared to those who had not benefited from aPNS (aOR=0.57; 95% CI, 0.35-0.95, p=0.030*). Similarly, unfriendly services were the most common barrier among the non-beneficiaries. Those who participated in aPNS were 94% less likely to mention unfriendly services as one of the barriers (aOR=0.06; 95% CI, 0.02-0.18, p=<0.001*). However, unwillingness and inability to notify partner was the common barrier of aPNS among the beneficiaries. Beneficiaries were 2.3 times more likely to indicate unwillingness and inability to notify partner as one the barriers to aPNS (aOR=2.26; 95% CI, 1.04-4.88, p=0.039*).

4.5 Socio demographic characteristics of the study respondents.

Table 4.8: Distribution of respondents by Socio-demographic characteristics

Social Demographic characteristics	Frequency (N= 423)	%
Age category		
16- 25 years	72	17
26-35 years	141	33.3
36-45 years	129	30.5
46-55 years	61	14.4
56 and above years	18	4.3
Missing	2	0.5
Gender		
Male	190	44.9
Female	227	53.7
Missing	6	1.4
Marital status		
Single	70	16.5
Married	264	62.4
Separated/Divorced/Widowed	79	18.7
Other	8	1.9
Missing	2	0.5
Residence		
Permanently residing in rural setting/home	307	72.6
Permanently resides in urban setting/home	64	15.1
Works in urban center and resides in rural home	37	8.7
Works in rural setting and resides in urban home	11	2.6
Missing	4	0.9
Occupation		
Employed	263	62.2
Unemployed	57	13.5
Peasant	97	22.9
Missing	6	1.4

Table 4.9: Distribution of Socio-demographic characteristics of respondents.

Social Demographic characteristics	Frequency	%
	(N= 423)	
Religion		
Christian	406	96.0
Islam	6	1.4
Other	6	1.4
Missing	5	1.2
Population type		
Sex worker	2	0.5
Uniform forces	2	0.5
Truck driver	2	0.5
Adolescent girls and young women	22	5.2
General population	349	82.5
Fish fork	17	4.0
Boda boda Rider	20	4.7
Other	7	1.7
Highest Level of education		
None	13	3.1
Primary level	212	50.1
Secondary level	124	29.3
College/University	71	16.8
Missing	3	0.7
Condom use		
Yes	235	55.6
No	175	41.4
Missing	13	3.1

Table 4.10: Distribution of respondents by Socio-demog characteristics.

Social demographic characteristic	Frequency (N= 423)	%
Where tested		
Outpatient department	153	36.2
VCT	119	28.1
Outreach	53	12.5
MCH/Maternity	52	12.3
Inpatient	34	8.0
TB clinic	6	1.4
Other	6	1.4
Period on care		
Less than 6 months	47	11.1
6 months to 1 year	34	8.0
1-2 years	29	6.9
2-4 years	107	25.3
5 years and above	204	48.2
Missing	2	0.5
Sexually active		
Yes	388	91.7
No	17	4
Missing	18	4.3
Number of sexual partners		
One	201	47.5
Two	144	34.0
Three	52	12.3
4 and above	22	5.2
Missing	4	0.9

Tables 4.8, 4.9 and table 4.10 indicate that among the 423 adults on HIV care, majority (33.5%) were aged between 26-35 years and 54.5% of them were female while married were (63.4%) and Christians (95%). Majority of the respondents in the study resided in the rural setting (73.3%) and most of them were self-employed (40%). Moreover, 50.5% of subjects attained primary level education and were from the general population (83.9%).

4.5.1 Key areas under social demographic characteristics given more attention

4.5.2 Period Under care

Figure 4.5.1 below show various durations during which respondents who are HIV positive have been under care. From the results shown, 204 patients have been in under care for a period of 5 years and above followed patients who have been under for six months. In between there is a big reduction in the numbers of patients under care which could mean at some point there were gaps in case finding, linkage and retention on HIV care.

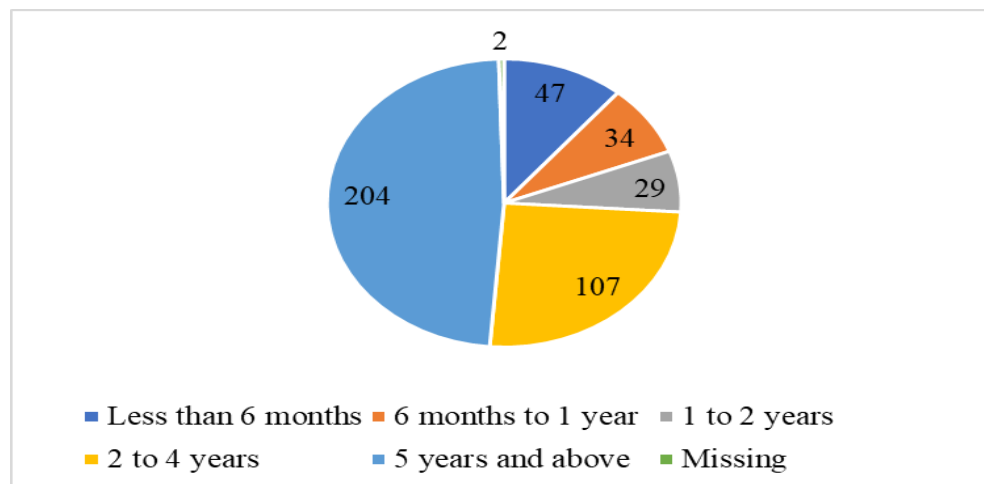


Figure 4.3: Distribution of the respondents by period under care.

4.5.3 Number of sexual partners.

From table 4.5.1 majority of the respondents, being 201 translating to 47.5% had one sexual partner followed by 144 translating to 34% who had two sexual partners. These results reveal the public health importance of multiple sexual partners' networks. Therefore, the fact that 34% of respondents had multiple sexual partners denotes a public health concern regarding HIV transmission in the community. This calls for

public health campaigns to avert multiple sexual partners' networks at community level.

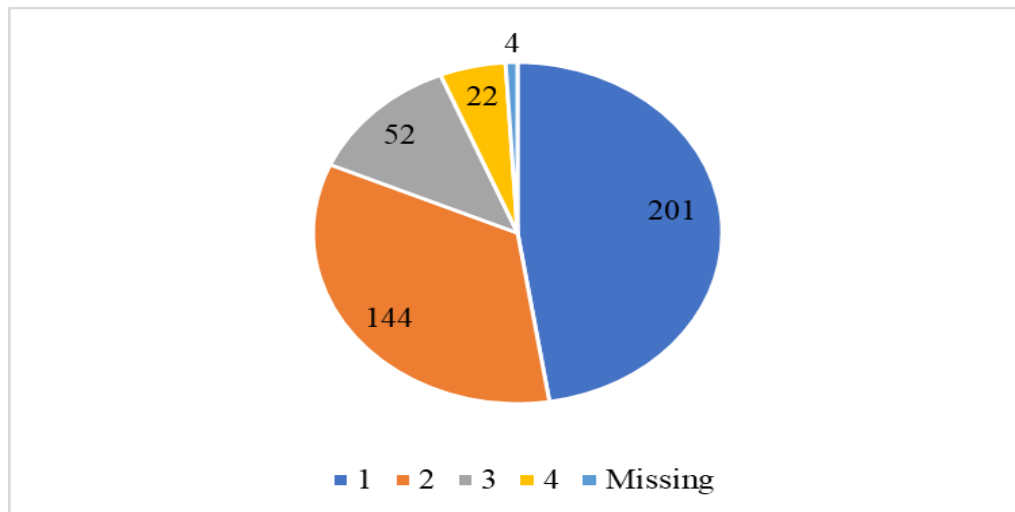


Figure 4.4: Distribution of the respondents by number of sexual partners.

4.5.4 Strategy of identification.

Figure 4.5.2 shows where various respondents got their HIV testing and from the results, majority (153) of them got tested during their visit at the out-patient department followed by 117 at VCT. These results show much still need to be done to encourage people to volunteer for testing.

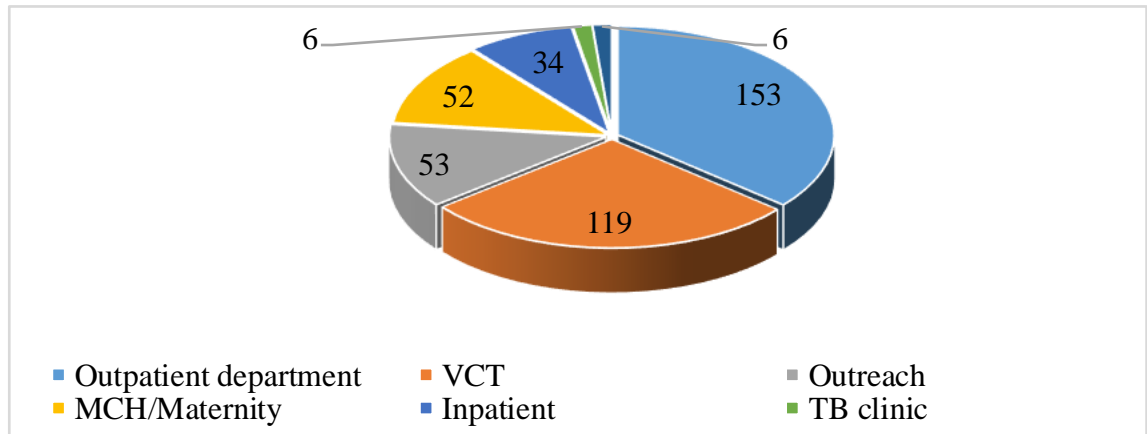


Figure 4.5: Strategy of identification.

4.6 Association between socio-demographic variables and barriers to uptake of aPNS.

Table 4.11: How age affects the uptake of aPNS.

Age	Yes	No	Chi-square p-value for age
16-25	59 (81.2%)	13 (18.1%)	0.136
26-35	128 (90.8%)	13 (9.2%)	
36-45	109 (84.5%)	20 (15.5%)	
46-55	55 (90.2%)	6 (9.8%)	
55 and above	13 (72.2%)	5 (27.8%)	

Table 4.11 shows uptake of aPNS versus non-uptake in various age groups under study. From the findings the uptake was predominant within the ages of between 46 - 55 years, followed by 26 - 35 years then 16 - 25 years and finally 55 years and above. It is also important to note that Chi-square p-value for age was 0.136 making it more than 0.05 hence it has no significant value.

Table 4.12: How sex affects uptake of aPNS.

Sex	Yes	No	Chi-square p-value for sex
Male	165 (86.8%)	25 (13.2%)	0.724
Female	200 (88.2%)	27 (11.9%)	

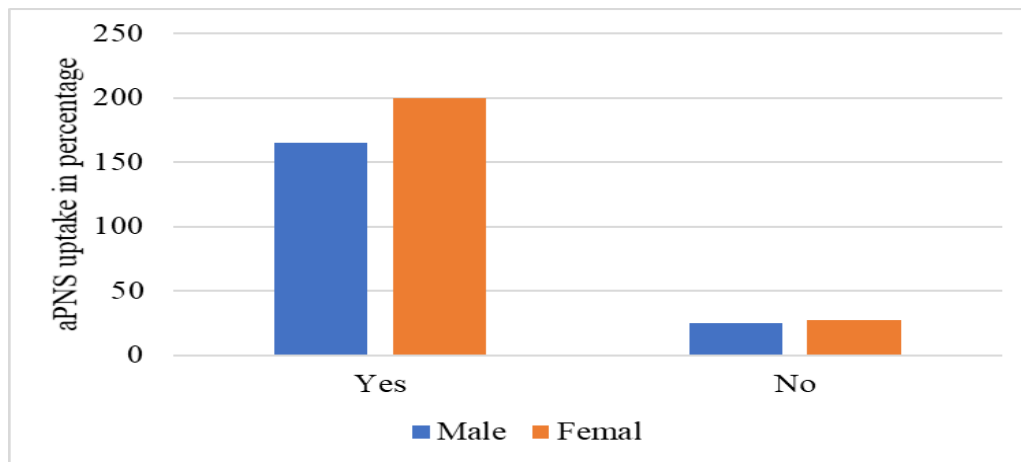


Figure 4.6.: Uptake of aPNS versus non-uptake between male and female respondents.

Table 4.12 and figure 4.6.1 shows how gender affected uptake aPNS. From the findings, females had a higher percentage of uptake at 88% as compared to the males. The chi square P- value of sex as a factor stood at 0.724 making it above 0.05 hence insignificant.

Table 4.13: How level of education affect uptake of aPNS

Level of education	Yes	No	Chi-square value for level of education	p-
No school	8 (61.5%)	5 (38.5%)	0.067	
Primary	187 (88.2%)	25 (11.8%)		
Secondary	111 (89.5%)	13 (10.5%)		
College/University	65 (91.5%)	6 (8.5%)		

Table 4.13 shows how level of education affected the uptake of aPNS. The findings show that the uptake was predominant among respondents with college/university education, followed by respondents with secondary school then primary school education and finally the least uptake was among the respondents who had no education. These findings show that knowledge played a key role on the decision to uptake aPNS. The chi-square P-value for level of education was 0.067 which is more than 0.05 hence level of education has no statistical significance to the uptake of aPNS.

4.6.1 Marital status.

Table 4.14: How marital status affected uptake of aPNS

Marital status	Yes	No	Chi-square value for Marital status	p-
Single	61 (87.1%)	9 (12.9%)	0.846	
Married	240 (90.9%)	24 (9.1%)		
Divorced/Separated/Widowed	70 (88.6%)	7 (11.4%)		
Other	7 (87.5%)	1(12.5%)		

Table 4.14 and figure 4.6.2 show how marital status affected the uptake of aPNS. The findings show the uptake was more predominant among married people followed by people who are divorced/separated/widowed. The chi-square P-value for marital status is 0.846 which is above 0.05 hence marital status was insignificant. It is important note that 2 respondents did to not reveal their marital status.

4.6.2 Residence

Table 4.15: How residence affected uptake of aPNS

Residence	No	Yes	Chi-square p-value for residence
Permanent urban	6 (9.4%)	58 (90.6%)	0.014
Permanent Rural	35 (12.1%)	270 (87.9%)	
Works in urban	0 (0%)	37 (100%)	
resides in rural			
Works rural resides in urban	3 (27.3%)	8 (72.7%)	

Table 4.15 shows how place of residence affected uptake of aPNS. The findings show that there was 100% uptake of aPNS among respondents who worked in urban and resided in the rural areas. However, there was 90.6% uptake among respondents who permanently resided in the urban compared to 87.9% in rural areas. The chi square P-value of residence was 0.014. It is important to know that four respondents did not mention their places of residence.

4.6.3 Occupation.

Table 4.16: How occupation affected uptake of aPNS.

Occupation	No	Yes	Chi-square p-value for Occupation
Employed	26 (9.9%)	237 (90.1%)	0.063
Not employed	6 (10.5%)	51 (89.5%)	
Peasant	19 (19.5%)	78 (80.5%)	

Table 4.16 shows how occupation affected uptake of aPNS. The findings show that aPNS uptake was lowest among the peasants at 19.5% followed by those not employed 10.5%. Uptake was highest among the employed at 90.1%. The P-value for occupation was 0.063 hence statistically insignificant being that was more than 0.05.

4.6.4 Religion.

Table 4.17: How religion affected uptake of aPNS

Religion	No	Yes	Chi-square p-value for religion
Christian	52 (12.9%)	354 (87.1%)	0.499
Islam	0 (0%)	5 (100%)	
Other	0 (0%)	5 (100%)	

Findings on table 4.17 shows that uptake of aPNS was higher among the Islam and the other religion. Uptake was lowest among Christians at 87.8%. These findings show that more should be done by religion leaders to promote the uptake of aPNS. Chi- square P-value for religion is 0.499 meaning it is insignificant.

4.6.5 Population Type.

Table 4.18: How population type affected the uptakes of aPNS.

Population type	No	Yes	Chi-square p-value for residence
General population	41 (12.2%)	296 (87.8%)	0.424
Adolescent girls and young women	5 (22.3%)	17 (77.3%)	
Boda boda riders	1 (5.3%)	18 (93.3%)	
Fisher folk	1 (6.7%)	14 (93.3%)	
Sex workers	1 (50%)	1 (50%)	
Truck drivers	0	2 (100%)	
Uniformed forces	0	2 (100%)	
Other	0	2 (100%)	

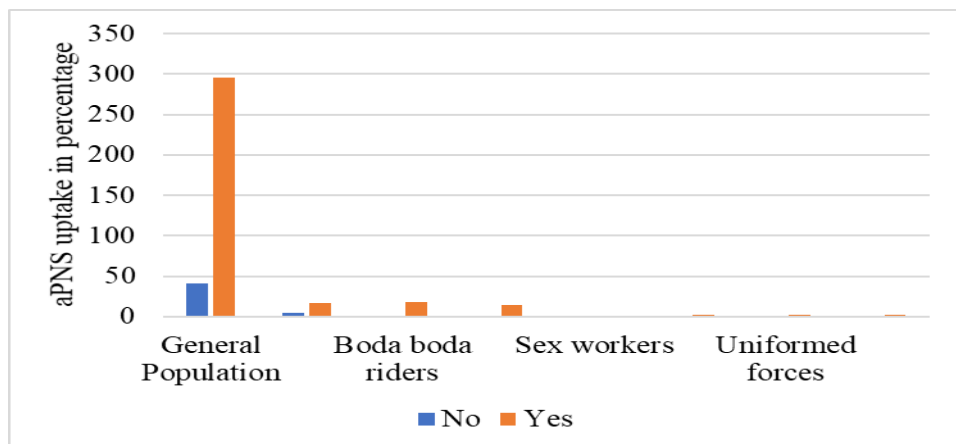


Figure 4.7: How population type affected aPNS uptake.

Table 4.18 and figure 4.6.3 shows how population type affected aPNS uptake. The findings show that uptake was high among the general population followed by boda boda riders and fisher fork. The P-value was 0.424 meaning was insignificance since was above 0.05.

4.6.6 Strategy of identification.

Table 4.19: How place of testing affected uptake of aPNS

Where tested	Yes	No	Chi-square -value for where tested
Outpatient	132 (86.3%)	21 (13.7%)	0.854
VCT	102 (85.7%)	17 (14.3%)	
Outreach	49 (92.5%)	4 (7.5%)	
MCH/Maternity	48 (92.3%)	4 (7.7)	
Inpatient department	30 (87.5%)	4 (12.5%)	
TB clinic	4 (100%)	0 (0%)	
Other	5 (83.3	1 (16.7%)	

Table 4.19 shows how place of testing influenced the uptake of aPNS. The findings show that 100% who got tested on TB clinic opted into aPNS followed by outreach 92.5% and MCH/maternity at 92%. The uptake was lowest on other testing service points. The P value of testing strategy was 0.854 thus above 0.05 hence has no

statistical significance.

4.6.7 Period on care.

Table 4.20: How period on care affected aPNS

Period on care	Yes	No	Chi-square p-value for period on care
Less than 6 months	42 (89.4%)	5 (10.6%)	0.373
6 months to 1 year	29 (85.3%)	5 (14.7%)	
1 to 2 years	27 (93.1%)	2 (6.9%)	
2 to 4 years	88 (82.2%)	19 (17.8)	
5 years and above	184 (90.2%)	20 (9.8%)	

Table 4.20 shows how period on care affected aPNS uptake. The findings indicated that uptake was higher among the respondents who had been on care for between 1 and 2 years, followed by respondents who had been on care for 5 years and above. The chi square P- value for period on care was 0.373 which was above 0.05 hence not significant statically.

4.6.8 Sexually active.

Table 4.21: How being sexually active affected aPNS uptake

Sexually active	Yes	No	Chi-square p-value for sexually active
No	13 (76.5%)	4 (23.5%)	0.214
Yes	344 (88.7%)	44 (11.3%)	

Table 4.21 shows how being sexually active affected aPNS uptake. Findings showed that uptake was more among the respondents who were sexually active. Chi- square P value for being sexually active was 0.214, thus statically insignificant.

4.6.9 Condom use.

Table 4.22: How condom use affected aPNS uptake

Condom use	Yes	No	Chi-square	p-
			value for sex	
No	152 (86.9%)	23(13%)		
Yes	210 (89.4%)	25 (10.6%)	0.542	

Table 4.22 shows how condom use affected aPNS uptake. Findings indicate that uptake was higher among respondents who used condoms as compared to the respondents who did not. Chi square P – value for use of condom was 0.542 which is higher than 0.05 hence not statistically significant.

4.6.10 Number of sexual partners.

Table 4.23: How number of sexual partners influenced aPNS uptake

Number of sexual partners	Yes	No	Chi-square	p-value	for
			number of sexual partners		
One	179 (87.2%)	25 (12.8%)			
Two	131 (91.0%)	13(9.0%)			
Three	44 (84.6%)	8 (15.4%)	0.617		
4 and above	19 (86.4%)	3 (13.6%)			

Table 4.23 shows how numbers of sexual partners influenced the uptake of aPNS. Findings show that the uptake was more among respondents who had two sexual partners. Chi square P- value for number of sexual partners was 0.617 which was above 0.05 hence not statistically significant.

4.6.11 Comparison on how social demographic characteristics affected aPNS uptake.

Table 4.24: Comparison on how social demographic characteristics affected aPNS uptake

Socio-Demographic characteristics	No aPNS uptake n(%)	aPNS uptake n(%)	Chi- square χ^2 (df)	P- value
Age				
16-25 years	59 (81.2%)	13 (18.1%)	5.545 (4)	0.136
26-35 years	128 (90.8%)	13 (9.2%)		
35-45 years	109 (84.5%)	20 (15.5%)		
46-55 years	55 (90.2%)	6 (9.8%)		
55 and above years	13 (72.2%)	5 (27.8%)		
Sex				
Male	165 (86.8%)	25 (13.2%)	0.125 (1)	0.724
Female	200 (88.2%)	27 (11.9%)		
Level of education				
No school	8 (61.5%)	5 (38.5%)	7.159 (3)	0.067
Primary	187 (88.2%)	25 (11.8%)		
Secondary	111 (89.5%)	13 (10.5%)		
College/ university	65 (91.5%)	6 (8.5%)		
Marital status				
Single	61(87.1%)	9 (12.9%)	0.814 (3)	0.846
Married	240(90.9%)	24 (9.1%)		
Divorced/Separated/	70 (88.6%)	7 (11.4%)		
Widowed				
Other	7 (87.5%)	1(12.5%)		
Residence				
Permanent urban	6 (9.4%)	58 (90.6%)	6.038 (3)	0.014
Permanent Rural	35 (12.1%)	270 (87.9%)		
Works in urban	0 (0%)	37 (100%)		
resides in rural				
Works rural resides in urban	3 (27.3%)	8 (72.7%)		

Table 4.25: Comparison on how social demographic characteristics affected aPNS uptake

Socio-Demographic characteristics	No aPNS uptake n(%)	aPNS uptake n(%)	Chi- square χ^2 (df)	P- value
Occupation				
Employed	26 (9.9%)	237 (90.1%)	7.297 (2)	0.063
Not employed	6 (10.5%)	51 (89.5%)		
Peasant	19 (19.5%)	78 (80.5%)		
Population type				
General population	41 (12.2%)	296(87.8%)	7.047 (7)	0.424
Adolescent girls and young women	5 (22.3%)	17 (77.3%)		
Boda boda riders	1 (5.3%)	18 (93.3%)		
Fisher folk	1 (6.7%)	14 (93.3%)		
Sex workers	1 (50%)	1 (50%)		
Truck drivers	0	2 (100%)		
Uniformed forces	0	2 (100%)		
Where tested				
Outpatient	132(86.3%)	21 (13.7%)	3.319 (6)	0.854
VCT	102 (85.7%)	17 (14.3%)		
Outreach	49 (92.5%)	4 (7.5%)		
MCH/Maternity	48 (92.3%)	4 (7.7)		
Inpatient department	30 (87.5%)	4 (12.5%)		
TB clinic	4 (100%)	0 (0%)		
Other	5 (83.3)	1 (16.7%)		
Period on care				
Less than 6 months	42 (89.4%)	5 (10.6%)	4.252(4)	0.373
6 months to 1 year	29 (85.3%)	5 (14.7%)		
1 to 2 years	27 (93.1%)	2 (6.9%)		
2 to 4 years	88 (82.2%)	19 (17.8)		
Sexually active				
No	13 (76.5%)	4 (23.5%)	1.544 (1)	0.214
Yes	344 (88.7%)	44 (11.3%)		
Condom use				
No	152 (86.9%)	23(13%)	1.225 (1)	0.542
Yes	210 (89.4%)	25 (10.6%)		
Number of sexual partners				
One	179 (87.2%)	25 (12.8%)	3.542(3)	0.617
Two	131 (91.0%)	13(9.0%)		
Three	44 (84.6%)	8 (15.4%)		
4 and above	19 (86.4%)	3 (13.6%)		

Table 4.24 and 4.25 show all the social demographic characteristics and their level of significance to the study. The findings indicated that all social demographic characteristics had no significance to aPNS uptake with the exception of residence. At 95% confidence, only Residence was found to have an association with aPNS uptake

$(\chi^2 = 6.038 (p < 0.05)).$

CHAPTER FIVE

DISCUSSION SUMMARY AND CONCLUSION.

5.1 Introduction.

This chapter entails discussions of the findings, conclusions from the findings and finally recommendations made based on the findings of the study.

5.2 Discussions of the findings.

5.2.1 The study sought to establish the preferred method(s) of aPNS.

Findings indicated that, provider referral was the most preferred method. This is when with the consent of the HIV infected client (index), the counselor/provider directly contacts the client's partner(s), informs them that they have been exposed to HIV, and offers them voluntary HTS while maintaining the confidentiality of the index client.

The findings are consistent with studies by Carnicer-Pont *et al.* (2015), Roberts *et al.* (2015) and Wayal *et al.*, (2012) which recommended that provider referral may be helpful for notifying non-primary partners. Similarly, the findings also agreed with a study among PWIDs which reported that, 71% of HIV-positive persons nominated provider referral over other methods used to contact partners (Levy & Fox, 1998). However, the findings were in contrast with a study from the United Republic of Tanzania where 93% of HIV-positive persons favored passive methodologies over contract or provider referrals (Plotkin *et al.*, 2016). According to a study on aPNS in North Carolina which aimed to compare provider and patient-referral; in the provider-referral group 50% were successfully notified, whereas in the patient-referral group 7% were notified. This implied that provider referral was preferred referral method compared to patient referral.

Moreover, a study on the maximizing HIV aPNS opportunities in Malawi established

that while most index participants and partners expressed a preference for passive notification, provider referral was preferred (Kamanga *et al.*, 2015). Similar findings were also established in a study in Cameroon on case finding effectiveness where health advisors recorded aPNS plans for the index participants and most of the clients preferred notifying their partners through provider referral (Henley *et al.*, 2013).

5.2.2 Barriers to aPNS.

According to the study, fear of separation, embarrassment/shame and stigma were mentioned as the major barriers to aPNS. These findings are consistent with other studies which established concerns about humiliation, remorse, shame, the loss of independence and emotional support, besides suspicions of stigma, rejection, desertion and relationship separation as the main obstructions that individuals suggested would hinder them from eliciting their partners/companions (Adams *et al.*, 2015; Carnicer-Pont, Barbera-Gracia, Fernández-Dávila, García de Olalla, *et al.*, 2015; Roberts *et al.*, 2015; Wayal *et al.*, 2012). The findings also concur with a study in China on barriers to aPNS for HIV prevention which indicated that stigma, discrimination and possible negative consequences as barriers (Zhang *et al.*, 2019). Further, according a qualitative study on understanding barriers to aPNS scale up in Sub Saharan Africa, stigma and breach of confidentiality was some of the barriers to the strategy (Goyette *et al.*, 2016). Additionally, according to a qualitative study on barriers of aPNS in Barbados, fear, stigma and discriminations were some of the factors that deterred the strategy (Adams *et al.*, 2015). From the study, it was evident that most of these individual level barriers would hinder aPNS greatly since these barriers hinders individuals from discussing their HIV status and sexual behaviors with their partners, especially given extra-marital sexual relationships. Moreover, the lack of community awareness about aPNS may also deter individuals from eliciting their partners.

The findings are also consistent with a qualitative study on assessment of the barriers and opportunities for scale up in Nairobi, which revealed that fear of disclosure to partners included concerns over relationship repercussions, loss of trust, blame and

violence. Stigma and discrimination were described in the health care setting, at church and in general society as some of the barriers to aPNS (Monroe-Wise *et al.*, 2019). Further, findings from a mixed method study on outcomes and experiences of men and women on aPNS, it was established that fear of separation, time and geographical distance were some of the barriers to notifying clients. It was clear in this study that female index clients mentioned gender specific challenges to aPNS (Plotkin *et al.*, 2018).

In this study, respondents who had not participated in the aPNS were more likely to mention fear of separation, stigma and unfriendly services as some of the barriers to aPNS compared to those who had participated. Unwillingness and inability to notify partner was the commonest barrier to aPNS among the beneficiaries of aPNS. This is in line with Carnicer-Pont *et al.* (2015) and WHO (2014a) who stated that the obstacle to alerting companions was not knowing a mate, not having their contact information, or not being able to find them. Thus, these were limiting factors in alerting non-primary and casual partners and possibly will mostly distress KPs and their readiness as well as capacity to alert spouses (Carballo-Diequez *et al.*, 2002).

Moreover, a European report highlighted lack of resources, provider skills and time as barriers to aPNS. Additionally, the report indicated that inadequate resources for aPNS limited the functionality and the operations of the strategy. Also, a barrier to notifying partners amongst men was men's violent reactions while amongst women were fear of separation.

Current study findings concur with a systematic literature review consisting of cross-sectional studies and randomized controlled trials on improving HIV testing and partner notification. The review established that aPNS improved partner testing and identification of HIV positive partners (Dalal *et al.*, 2017). Kamanga *et al.* (2015) also established that some of the benefits of the aPNS include HIV testing and access to ART. Notably, these findings are also correlated with the current study findings.

Similarly, a study on the feasibility of aPNS in Cameroon established that 71.5% of notified contact persons tested for HIV, 51.8% of whom tested HIV positive and 65.3% HIV positive partners were referred to HIV care and treatment centers. This implied that aPNS improved testing and linkage process (Tih *et al.*, 2019). Similarly, according to a randomized controlled trial at STI clinics in Malawi, aPNS increased the number of sexual partners testing for HIV compared to usual practices (Brown *et al.*, 2011).

Further a study in Tanzania established that of the newly diagnosed individuals, 60% of their index clients were enrolled and 56.8% were successfully referred. Of 249 partners reaching the facilities, 96% tested for HIV and 70.3% of partners testing positive were enrolled into HIV care and treatment. This implies that aPNS improved testing and linkage to care and treatment (Kahabuka & Kisendi, 2016). Similarly, a study in scaling up aPNS in Cameroon also established that aPNS improved HIV testing and improved the detection of new HIV positive cases (Henley *et al.*, 2013). According to a report on improving HIV case finding using aPNS in Zambia, aPNS increased testing and promoted the knowledge of HIV status based on its introduction in 10 health facilities.

The current study findings also concur with what Masyuko *et al.* (2019) in their study in Kenya who established that aPNS promoted HIV testing and case finding. The study also considered index characteristics in its examination and according to randomized controlled trial in Kenya, aPNS increases HIV testing and identification of cases (Cherutich *et al.* 2017).

5.2.3 Distribution of socio-demographic characteristics among the respondents.

Most of the respondents were aged between 26 years to 35 years (30.5%) while 17% were between 16 to 25 years. This is in line with a study on understanding the barriers to aPNS in Kenya which established that, the median age for participation was 40 years with an interquartile range of 30 years to 47 years (Goyette *et al.*, 2016). Similarly, according to Cherutich *et al.* (2017) who did a randomized controlled trial in Kenya, the median age for the index participants was 30 years. Further, majority of the

respondents were female (53.7%) while male participants accounted for 44.9%. The findings concur with a qualitative study on aPNS in Kenya which established that, out of the 47 participants included in the focused group discussions and in-depth interview, 66% were female (Monroe-Wise *et al.*, 2019). Further, Goyette *et al.* (2016) also established that 60% of the participants in Kenya were female. Similarly, the study findings concur with findings by Cherutich *et al.* (2017) who established that majority of the index participants were female.

Further, this study found that majority of the participants was married (62.2%). This concurs with findings by Masyuko *et al.* (2019) who established that majority of the index clients were married. Similarly, a randomized controlled trial on aPNS in Kenya established that, majority of the index participants were married monogamous (Cherutich *et al.*, 2017). According to these study findings, 72.6% of the participants were residing permanently in the rural settings or homes. This is in contrast with what Masyuko *et al.* (2019) established that 42% of the participants of the study were from the rural or peri urban settings. Additionally, 62.2% of the respondents were employed. This is in contrast with what Cherutich *et al.* (2017) established that majority of the index participants were unemployed. Based on the study findings, 96% of the participants were Christians. This is because Christianity is the most predominant religion in the study site (National AIDS Control Council, 2014). Further, 50.1% of the participants had primary level of education. This is consistent with a study by Goyette *et al.* (2016) that was conducted in Kenya which established that 55% of the participants had primary level of education or less.

5.2.3.1 Association between socio demographic characteristics and aPNS.

Findings indicated that with an exception of residence, all other social demographic characteristics i.e., age, education, occupation among others examined were not associated with uptake of aPNS hence statistically insignificant. Further, the findings indicated those who were aged 16-25 years were less likely to participate in aPNS (81.2%) as compared to those aged 46-55 years (90.2%). This implies that younger HIV infected

persons were less likely to be enrolled to aPNS compared to the older generation. This finding is in contract with a study on index participants' characteristics and HIV aPNS which established that among index clients who received immediate aPNS, there were higher rates of HIV testing for partners of those less than 30 years compared to those who were 30 years and older (Masyuko *et al.*, 2019). This is further emphasized by a study on aPNS in Tanzania, in which the mean age of the index clients was 33 years. It is also important to note that Chi-square p-value for age was 0.136 making thus than 0.05 hence had no statistical significance to the study.

Education was also an important factor which indicated that those with college and university levels of education were more likely to participate in aPNS (91.5%) compared to those with no education (61.5%). Findings concurs with a study by Kahabuka & Kisendi, (2016) which established that those who had secondary level of education and above were less likely to refer at least one sexual partner as compared to those with no formal education. These findings also conform to a study on aPNS for STIs in South Africa which established that patients who had formal education were more likely to notify their partners (Kalichman *et al.*, 2017). These findings also agree with another study in the USA on aPNS among youth living with HIV. From all the 14 cities USA in which the study was carried out, it was established that those who had some college or technical school level of education were more likely to engage in successful aPNS (van den Berg *et al.*, 2018). However, the chi-square P-value for level of education was 0.067 which is more than 0.05 hence level of education had no statistical significance to the uptake of aPNS.

Further, findings indicated that 90.6% of those in urban areas were more likely to participate in aPNS uptake as compared to 87.9% of those in the rural areas. The findings are in contrast with a study of index participants' characteristics which established high efficacy of aPNS in rural areas (Masyuko *et al.*, 2019). Further, according to a study on aPNS in Cameroon, majority of the consented index participants of the strategy were seen in a rural facility (Tih *et al.*, 2019). On the other hand, Henley *et al.* (2013) revealed that aPNS had been shown to be feasible and

effective in detecting new HIV infections in both high- and low-resource settings. Notably, the chi square P- value for residence was 0.014 thus depicting statistical significance between residence and aPNS uptake.

5.3 Conclusions and Recommendations.

5.3.1 Conclusions.

On investigation on the preferred contact method(s), provider referral and client referral methods were the two most favored methods of notifying partners.

The study also established that some of the main reasons for not enlisting partners for aPNS were stigma, fear for separation and fear of taking blame. The study also highlighted some benefits of the aPNS and one of the main benefits was HIV testing and knowledge of HIV.

The study also established that, some of the barriers of aPNS included fear of separation, stigma, shame and embarrassment while facilitators of aPNS included concern of the partner's health and acceptance of the HIV status.

Findings of the study established that, those who were younger (16-25 years) were less likely to participate in aPNS compared to those who were older (46-55 years). The study also found out that aPNS uptake was high among respondents with formal education compared to those without education. Finally, under social demographic characteristics there was a higher uptake of aPNS among the respondents staying in the urban as compared to those staying in the rural settings.

5.3.2 Recommendations of the study.

Programs should facilitate the implementation of provider as well as client referral methods of notifying partners to complement the traditional passive notification.

People living with HIV should be made aware of the benefits of aPNS so that barriers to

the same can be avoided.

Provision of aPNS should be enhanced in the urban settings, targeted to the younger generation as well and those in schools through health talks in these settings to promote uptake and acceptability of aPNS.

5.3.3 Suggestions for further studies.

Further studies on determinants and effectiveness of aPNS should be done in Kenya especially in counties with high prevalence rates since the study was limited to Seme and Kisumu west sub counties.

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APPENDICES

Appendix I: Consent Form (English Version)

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
KISUMU CBD CAMPUS

Consent to be a study Participant Main Consent Form

Study Title: DETERMINANTS OF ASSISTED PARTNER NOTIFICATION SERVICES FOR HIV TESTING AMONG ADULTS ON HIV CARE IN SEME AND KISUMU WEST SUB COUNTIES

Institutions: JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY KISUMU CBD CAMPUS

Study Locations: Kombewa County Hospital and Manyuanda Sub County Hospital
Seme Sub County; Chulaimbo County Hospital Kisumu West

Sub County

Funding Source: The researcher; Anangwe Munala Samson

Study supervisors:

Dr. Dennis G. Magu.

PhD. Epidemiology.

Jomo Kenyatta University of Agriculture and Technology. College of Health Sciences.

School of Public Health.

Dr. Fredrick O. Otieno. DCMS, PGC, MPH. PhD.

Nyanza Reproductive Health Society

Participant information.

Thank you for your interest in this study. The researcher; Mr. Anangwe Munala Samson is conducting research to find out the determinants of sexual partner notification for HIV testing among adults on HIV care in Seme and Kisumu west sub counties. The title of this study is “*Determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu west sub counties.*” This study will take place at the Kombewa County Hospital, Manyuanda Sub County Hospital in Seme Sub County and Chulaimbo County Hospital in Kisumu West Sub County. The study is funded by the researcher Mr. Anangwe Munala Samson. Before you decide on whether or not to take part in this study, we would like to explain the purpose of the research study, how it may help you or others, any risk to you, and what is expected of you. This process is called informed consent.

It is important that you know the following:

Taking part is of your own free will (entirely voluntary). You may choose not to participate or to withdraw from the study questionnaire administering session at any time/moment during the session without prejudice.

If you withdraw from the study, no further data will be collected from you.

Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled.

After you read the explanation or have been explained to the purpose and procedure of the study, please feel free to ask any questions that will allow you to clearly understand the nature of the study.

If you decide to participate in this study, we will inform you of any new or significant

findings that may affect your willingness to participate in the study.

Your participation is voluntary.

The study staff will talk with you about information in this form. The researcher encourages you to ask questions about the study at any time. You can take as much time as you need to review this form and discuss your study participation with your family, friends, and related community as you feel comfortable and appropriate, in order to decide whether or not you would like to participate. A copy of this consent form will be provided to you.

Expected Length of Time in the Study.

This is a cross-sectional study, which means the study will be done at one-time point and no follow ups will be done.

Number of Volunteers Participating in this Study.

A total of 423 male and female individuals aged 18 years and above will participate in this study.

Eligible HIV infected Volunteers.

In order to participate in this study, you must:

- a) Be a male or female adult aged 18 years and above.
- b) Be HIV positive.
- c) A resident of Kisumu west and Seme sub county.
- d) Either have and/or not participated in assisted partner notification services.
- e) Consent to participate in the study.
- f) Be able to understand English, Kiswahili or Luo.

Purpose of the study.

The purpose of this study is to assess determinants of assisted partner notification services for HIV testing in Seme and Kisumu West sub Counties.

The information collected may help researchers to:

To assess factors that affect assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu West sub counties.

Procedures.

A total of 423 participants will be selected randomly from the target population being HIV infected male and female individual adults aged 18 years and above accessing HIV care and treatment services and have been beneficiaries of assisted partner notification services. The selected participants will be asked structured questions contained in the study questionnaire by trained research assistants who will administer the questionnaires to the respondents and mark/tick where appropriate or write statements where appropriate depending on the questions asked.

Risks.

The risks from taking part in this study are minor and include: Participation in this study could cause you problems like stigmatization in your community, with your family members, and/or with your job. Others might judge you for the reasons that you participated in this study. The research assistants will take great care to minimize the risk that anyone can learn any information about you or your status. Your personal identifying information (such as your name, national identification number, phone number etc.) will not be collected nor indicated on the questionnaire at the time of data collection. This measure will ensure confidentiality and will lessen the chances of your HIV status, and other information, becoming known to others. The research assistants will take appropriate action if there is a breach in confidentiality or if you experience any social harm by participating in this study.

Benefits.

You will not receive direct benefit from participating in this study. This knowledge will help promote HIV testing so that fewer people become infected with HIV. This can benefit families, communities, Kenya, and even other parts of Africa. The other benefit for participants in this study will be their contribution to informing, and increasing access to care and treatment among HIV-positive persons. Participants will also potentially benefit from the study by contributing information that can help design aPNS interventions that will be reach out to their partners for HIV testing should they actively be involved in the ongoing aPNS standard of care services.

Compensation.

You will not receive any compensation for participating in this study.

Alternatives to being in the study.

If you decide not to participate in this study, you will continue to receive the care you are entitled to from the comprehensive care centres (CCC)/health facilities.

What are the costs to you?

You will not be expected to pay for participating in the study.

Assurance of Confidentiality of Volunteer's Identity.

The researcher will maintain research records of your taking part in this study. Every effort will be made to keep these records as confidential as possible within the limits of the law. No personal identifier information will be collected thus ensuring the confidentiality of research information.

Complete confidentiality cannot be promised but every effort will be made to keep the records as confidential as possible within the limits of the law. All the information

obtained about you as an individual will be considered important and held in confidence. All of the trained research assistants and the researcher are bound by rules of confidentiality not to reveal your identity to others.

The information collected will be analyzed and shared with other investigators and the scientific community through presentations and/or publications; however, you will not be identified by name or other personal information, which could be used to identify you.

Problems or Questions.

If you have questions about this or have any issues that you think may be related to this study or experience any social harm, contact Mr. Anangwe Munala Samson or designated researchstaff at **0716871744** or **0735707507**.

Please keep a copy of this document in case you want to read it again. Thank you.

The Participant:

I have been asked to take part *in “Determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu west sub counties.”* research study. The researcher, Mr. Anangwe Munala Samson, or the research assistant as explained to me the significance and duration of the study, the methods to be used, and the risks that I am taking and dangers to which I may be exposed. I have been given a chance to ask questions about this research study. All questions were answered to my satisfaction. If I have other questions about this research, I can ask: Mr. Anangwe Munala Samson or designated research assistants at **0716871744** or **0735707507**.

If I have any questions about my rights as a study participant, I can ask the following:

Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). Research Ethics

Committee. P.O. Box 849 Kisumu| Telephone Number: 057-2020801/057-2020803/057- 2020321; Fax: 057-2024337| E-mail:ercjootrh@gmail.com| Website: <http://www.jaramogireferral.go.ke/>

I am signing below with my signature, mark or thumb-print, to indicate my wish to take part in this study, and my consent to follow the requirements of the study as much as possible. I will do my best to follow the recommendations of the study team, and I will report all problems occurring from this study to the study team.

It has been explained to me that I can quit/terminate the questionnaire administering process of this study at any time during the process, and I will not lose any benefits nor will I receive any penalty(ies). The risk that I could suffer as a result of participating in this study has been explained to me and I have been given a signed copy of the signed consent form.

I agree to participate in the research study. The purpose and nature of the study has been explained to me. I am participating voluntarily.

(Please tick one box below).

Participant's Name: Participant's Signature: Date: _____/_____/_____

(dd/mm/yyyy)

Interviewer's Name: Interviewer's Signature: Date: _____/_____/_____

(dd/mm/yyyy)

Researcher's Name Researcher's Signature Date _____/_____/_____

(dd/mm/yyyy)

Yes, I agree to participate

No, I do not agree to participate

Appendix II: Oboke Yieruok (Dholuo Version).

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
KISUMU CBD CAMPUS

Yie bedo Jachiwre enonro Oboke Maduong mar yieruok

Nying Nonro: DETERMINANTS OF ASSISTED PARTNER NOTIFICATION
SERVICES FOR HIV TESTING AMONG ADULTS ON HIV CARE IN SEME AND
KISUMU WEST SUB COUNTIES

Migepe: JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND
TECHNOLOGY KISUMU CBD CAMPUS

Kar Timo Nonro: Kombewa County Hospital and Manyanda Sub County Hospital
Seme Sub County; Chulaimbo County Hospital Kisumu West
Sub County

Jochiw Omenda: The researcher; Anangwe Munala Samson

Jorang Nonro:

Dr. Dennis G. Magu.

PhD. Epidemiology.

Jomo Kenyatta University of Agriculture and Technology. College of Health Sciences.

School of Public Health.

Dr. Fredrick O. Otieno. DCMS, PGC, MPH. PhD.

Nyanza Reproductive Health Society.

Weche Jachiwre:

Ogoni erokamano nikech bedo gi gombo mar bedo enonroni. Janonro; Mr. Anangwe
MunalaSamson timo nonro mondo ong'ego gigo makelo yore ma inyisogo johera kuom
pimo mar kute Ayaki ma itimo ne jomadongo mantie erit mar thieth ne kute Ayaki ei
Seme kod Kisumu west sub counties. Nying Nonro iluongo ni *“Determinants of*

assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu west sub counties.”. Nonroni biro timore e Kombewa County Hospital, Manyuanda Sub County Hospital in Seme Sub County kod Chulaimbo County Hospital mantie ei Kisumu West SubCounty. Nonro imiyo omenda kod janonro Mr. Anangwe Munala Samson. Kapodi ok iyiero mondo kata kik ichiwri enonroni, dwaher mar ler gima omiyo itimo nonro, kaka onyalo konyikata kod jomoko, rach moro amora ne in, kendo gino ma idwaro kuomi. Yorni iluongo ni lero yieruok.

Ber mondo omi ing'e maluwegi:

- a) Bedo jachiwre en kuom yiero mari (kuom hero mari). Inyalo tamri chiwri kata wuok kar oboke mar penjo mar nonro eseche ma ipenji esaa asaya/ ethuolo moromaonge kum.
- b) Ka iwuok enonro, onge weche momedore ma ibiro kawo kuomi
- c) Tamruok chiwri ok bi kelo kum kata lalo ber ma owinjore kodi.
- d) Bang' ka ise somo weche moler, kata oselerni gima omiyo kod chenro mag nonro,yie ibed thuolo penjo penjo moro amora mabiro miyi thuolo mar winjo kit nonro.
- e) Ka iyiero mondo ichiwri enonroni, wabiro nyisi gimoro amora manyien kata wach moro malich moyudi manyalo ketho gombo mari mar bedo jachiwre enonro.

Chiwruok Mari en kuom Hero Mari.

Jatij nonro biro wuoyo kodi kuom gigo mantie e obokeni. Janonro jiwi mondo ipenj penjo ewi nonro esaa asaya. Inyalo kawo thuolo midwaro moromi mondo irang go obokeni kendo wuoyo kuom chiwruok gi joodi, osiepe kod oganda michiegnigo kaka iwinjo ka yotni kendomowinjore, mondi iyier ka inyalo kata ka ok inyal chiwri. Oboke machal kod mae mokete seyi ibiro miyi.

Thuolo mar Bedo Enonro.

Mae en nonro marango gimoro achiel kuom kinde moyier, manyiso ni nonro ibiro tim dichiolkendo onge lup ma ibiro tim.

Kwan Jochiwre ma bet enonro.

Chwo gi Mine madirom 423 mahikgi 18 ka dhi nyime biro chiwre enonroni.

Jochiwre mowinjore mantie gi kute Ayaki.

Mondo ichiwri enonroni, nyaka:

- a) Bedi Dichwo kata Miyo mahike 18 ka dhi nyime.
- b) Bedi ni in kod kute Ayaki.
- c) Idak Kisumu west kod Seme Sub County.
- d) Obed ni osechiwre ama pok ochiwore eyore mag assisted partner notification services.
- e) Iketo yieruok mondo ichiwri enonroni.
- f) Bedi ni iwinjo Kisungu, Swahili kata Dholuo.

Gima Omiyo itimo Nonro.

Gima omiyo itimo nonroni en ni mondo oranggo gigo makelo yore mag assisted partnernotification ne pimo kute Ayaki ei Seme kod Kisumu West Sub Counties.

Weche mochoki nyalo konyo jononro:

Mondo ong'i weche machando yore mag assisted partner notification ne pimo mar kute Ayaki kuom jomadondo mantie erit mar kute Ayaki ei Seme kod Kisumu West Sub Counties.

Chenro.

Madirom jochiwre 423 ibiro yiero chabla chabla kuom oganda mowal mantie gi kute

mag Ayaki chwo kod mon madongo mahikgi 18 kadhi nyime mayudo rit kod thieth ne kute Ayaki kendo gisebedo jogo mayudo ber mar yore assisted partner notification. Jochiwre moyiergoibiro penjogi penyo mapangi ma ondiki e oboke penjo mar nonro gi jatij nonro motiegi mabiro tayo penjogo ne jaduoko kendo gwetho/ keto tik kama owijore kata ndiko weche kaka owinjore kaluworegi penjo mopenji.

Rach.

Rach mantie kuom bedo jachiwre enonroni gi matindo kendo giting'o: Chiwruok enonroni nyalo kelo chanruok kaka luoro gi wichkuot e ogandau, joodu, kod /kata etiji. Jomoko nyal kumi gima omiyo ne idonjo enonroni. Jotij nonro biro timo matek mondo oduok piny chandruok machalo kaka ng'ato ang'ata ok nyal yudo weche motudore kodi kata chal mari.

Wehegi mafuenyi (kaka nyingi, namba opande mari, namba mari mar sime kod machalo magi) okbi choki kata ketogi e oboke mar penjo ekinde mag kawo weche kuomi. Timni biroketo gikmoko apanda kendo duoko piny thuolo mar chal mari mar kute Ayaki kod weche mamoko ng'ere gi jomoko. Jotij nonro biro kawo ondam mowinjore kadipo ni kethruok moroobedo e arita mar maling'ling' kata iyudo kethruok eyoregi mag tudruok gi osiepe nikech ibedo jachiwre enonroni.

Ber.

Ok ibi yudo ber moriere kuom chiwruok enonroni. Riekogi biro konyo epim mar kute Ayaki mondo omi oganda matin obedi ni ema yudo kute mag Ayaki. Ma nyalo konyo joudi, oganda, Kenya kod pinje moko mae Africa. Ber moro ne Jachiwre mar chiwruok enonroni en chiwomargi en kelo wach, kendo medo thuolo mar chopo e kony mar rit kod thieth kuom jogo mantie kod kute Ayaki. Jochiwre bende biro yudo konyruok matin kuom bedo enonro ka gimedo riekoyore mag kony mar aPNS ma biro chopo ir joheragi ne pimo mar kute Ayaki kadigi chiwre matek eyore madhi nyime mag loso kony mag yore aPNS mag rit.

Chudo.

Ok ibi yudo chudo nikech chiwruok enonroni.

Machielo ka opogore kod bedo enonro.

Ka iyiero mondo kik ichiwri enonroni, ibiro dhi nyime gi yudo rit mowijore kodi, kar clinic mar chiwo thieth ne jomanigi kute mar ayaki.

Chudo mane midwaro kuomi?

Ok bi dwar ni mondo ichudi kuom bedo jachiwre enonro.

Rito maling'ling' mag weche minyalo fuenygo jochiwre.

Janonro biro kano bugeni mag nonro ma oting'o chiwruok mari enonroni. Nyalo duto ibiro keto mondo oketi bugego nonro eyo maling'ling' kaka nyalore ebwo chik. Onge weche mafuenyi ma ibirochoki mabiro miyo weche mag nonro bedo maling'ling'.

Maling'ling' chutho ok wanyal singore to kata kamano nyalo duto ibiro keti mondo one ni okan bugego nonro eyo maling'ling' kaka nyalore ebwo chik. Weche duto mochoki matudore kodi kaka jachiwre ibiro kwan kaka wach maduong' kendo ibiro rito eyo mapanda. Jotij nonro duto motiegi kod janonro oketi ebwo chik mar rito maling'ling' mondo kik gifuenyi ne ng'ato.

Weche mochoki ibiro pangi kendo nyiso jotend nonro mamoko kod oganda jo science eyor ranyisi kod/ kata andike; kata kamano okbi fueyi gi nying kata weche moriere mifuenyigo, ma inyalo tiyogo kuom ng'eyi.

Chandruok kata Penjo.

Ka ingi penjo kuom mae kata ingi weche moko mipari ni tudore kod nonroni kata ka iwinjokethruok etudruok mari gi oganda, tudri kod Mr. Anangwe Munala Samson kata

or jalup janonro moyiedhi e namba sime **0716871744** or **0735707507**. Yie ikan oboke machal gi mae kadipo ni idwaro somo kendo. Erokamano.

Jachiwre:

Osekwaya ondo achiwra enonro mar *“Gigo makelo tije mag assisted partner notification ne pim mag kute Ayaki kuom joma dongo kuom rit mar kute Ayaki ei Seme kod Kisumu West Sub County.”* Janonro, Mr. Anangwe Munala Samson, kata jalup janonro kaka oselerna gima nonro nyiso kod thuolo ma nonro kawo, yore mitiyogo, kod pek makawo kod rach mabedogo machiegni. Osemiya thuolo mondo apenji wach kuom nonroni. Penjo duto ne oduoka moroma. Ka angi penjo moro kuom nonroni, anyalo penjo: Mr. Anangwe Munala Samson kata jalup janonro moyiedhi e namba sime **0716871744** or **0735707507**.

Ka angi penjo kuom ratiro mara kaka jachiwre, anyalo penjo magi:

Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). Research Ethics Committee. P.O. Box 849 Kisumu| Telephone Number: 057-2020801/057-2020803/057-2020321; Fax: 057-2024337| E-mail:ercjootrh@gmail.com| Website: <http://www.jaramogireferral.go.ke/>

Aketo seyi pinyka gi seyi mara, gweho, kata lwedo mathuon, manyiso gombo mara mar bedo jachiwre e nonroni, kendo yiena mondo aluw chenro mag nonro kaka nyalore. Abiro timo nyalona mondo atim kaka jotim nonro owacho, kendo abiro wacho chandruok mawuokenonroni ne jotij nonro.

Oselerna ni anyalo weyo/ wuok ekor penjo oboke penjo mar nonroni esaa asaya ekinde mitime, kendo ok abi wito ber moro amora kata yudo kum moro amora. Rach ma anyalo yudo nikech chiwruok enonroni bende oselerna kendo osemiya oboke machal gi mae ma oketie seyi.

Ayie bedo jachiwre enonro. Gima omiyo itimo kod kit nonro oselerna. Achiwora kuom

heromara. (Gweth boxi achiel pinyka)

Ee, Ayie chiwra

Ooyo, Ok ayie chiwra

Nying Jachiwre:	Seyi jachiwre:	Tarik	____/____/____ (dd/mm/yyyy)
Nying Japenjo:	Seyi Japenjo:	Tarik:	____/____/____ (dd/mm/yyyy)
Nying Janonro	Seyi Janonro:	Tarik:	____/____/____ (dd/mm/yyyy)

Appendix III: Questionnaire (English Version)

Code Number (Serial number e.g. from 0001 to 0423).

Name of health facility:

SECTION 1: PREFERRED ASSISTED PARTNER NOTIFICATION METHODS AND INTIMATE PARTNER VIOLENCE.

Q.1.1. What is your most preferred method to contact your sexual partner(s) for assisted partner notification services?

N/B: Please specify method per partner enlist. Research assistant should take respondents through aPNS contacting methods before respondents give their preferred choices per partner(s).

N/B: Kindly choose from among these Methods:

Provider referral: With the consent of the HIV-positive index client, the counselor/provider directly contacts the client’s partner(s), informs them that they have been exposed to HIV, and offers them voluntary HTS while maintaining the confidentiality of the index client.

Contract referral: The index client enters into a “contract” with the counselor and/or health care provider whereby he or she agrees to disclose their HIV status to their partner(s) and refer them to HTS within a certain time frame. If partner(s) do not access HTS within this period, counselors/providers contact the partner(s) directly to notify them that they may have been exposed to HIV. Counselors/providers offer voluntary HTS to partner(s) while maintaining the confidentiality of the index client.

Dual referral: A trained provider sits with the HIV-positive client and his/her partner(s) to provide support as the client discloses his/her HIV status. The provider also offers voluntary HTS to the partner.

Client referral: The index client takes responsibility for disclosing their HIV status to partner(s) and encouraging partner(s) to seek HTS. This is often done using an

Tick where applicable.					
Preferred method for contacting sexual partner(s).	Partner 1	Partner 2	Partner 3	Partner 4	Partner 5
a) Provider referral.					
b) Contract referral					
c) Dual referral.					
d) Client referral.					
e) Other (Specify in the text box against partner).					

invitation letter or referral slip.

Q.1.2. Have you ever experienced violence from any of your sexual partners?

- a) Yes:
- b) No:

(Tick where applicable).

If YES, from the partner(s) you have enlisted, which of them would present with tendencies of violence/or are most prone to violence if you contacted them and disclosed your HIV status to them and indicated to them the need to them to know their HIV status?

N/B: Indicated Y for those who would present with violent tendencies and N for those who would not present with violent tendencies.	
Partner.	Response.
Partner 1	
Partner 2	

Partner 3	
Partner 4	
Partner 5	

Q.1.3. If YES to Q.1.2. above what type of violence was experienced against each of the partner(s) with a Y indicated?

Tick where applicable.			
Partner.	Sexual violence	Physical violence	Emotional violence
Partner 1			
Partner 2			
Partner 3			
Partner 4			
Partner 5			

(Tick where applicable).

SECTION 2: BARRIERS OF ASSISTED PARTNER NOTIFICATION SERVICES.

Q.2.1. Which of the following best describes the reasons for not enlisting your partner(s) for assisted partner notification?

Tick where applicable					
Reasons for not enlisting sexual partner(s).	Partner 1	Partner 2	Partner 3	Partner 4	Partner 5
a) Stigma and discrimination.					
b) Fear of separation.					
c) Fear of violence					
d) Fear of taking blame.					

e) Guilt.					
f) Other (Specify in the text box against partner).					

Q.2.2. Which of the following best describes the reasons that would encourage you to enlist your sexual partner(s) for assisted partner notification services.

- a) Need of disclosure.
- b) Help partner(s) access testing for HIV.
- c) Care of partner(s) health.
- d) Other (specify):

Q.2.3. Are you aware of any benefits of assisted partner notification services?

- a) Yes:
- b) No:

(Tick where applicable).

Q.2.4. If YES, what do you think are the main benefit of assisted partner notification services?

- a) HIV Testing and promotes knowledge of HIV status.
- b) It promotes linkage of new clients to HIV treatment.
- c) It's effective in identifying people with HIV.
- d) Prevents HIV transmission.
- e) Other (Specify:

Q.2.5. Are you aware of any barriers to assisted partner notification services?

- a) Yes:
- b) No:

(Tick where applicable).

If YES, please name as many as you know.

Barriers to aPNS.	Response (tick that apply).
Embarrassment and shame.	
Fear of loss of autonomy and emotional support.	
Stigma.	
Fear of violence.	
Fear of taking blame.	
Guilt.	
Fear of separation.	
Not knowing a partner.	
Not having partner(s) contact details.	
Unwillingness and inability to notify partner.	
Power dynamics in the relationship i.e. depending on your partner for financial support/providing for your partner financially.	
Unfriendly services.	
Negative attitude of health care workers.	
Concerns about confidentiality.	
Denial of HIV status.	
Other	(Specify):
.....	

SECTION 3: DEMOGRAPHIC INFORMATION.

Q.3.1. Age of the person:

- a) 16-20 years.
- b) 21-25 years.
- c) 26-30 years.
- d) 31-35 years.
- e) 36-40 years.
- f) 41-45 years.
- g) 46-50 years.
- h) 51-55 years.
- i) 56+ years.

Q.3.2. Gender (Tick as appropriate)

a) Male: ()

b) Female: ()

Q.3.3. Marital Status:

a) Single.

b) Married.

c) Divorced.

d) Widow.

e) Cohabiting.

f) Widower.

g) Separated.

h) Other (Specify):

Q.3.4. Residence:

a) Permanently residing in rural setting/home.

b) Permanently resides in urban setting/home.

c) Works in urban Centre and resides in rural home.

d) Works in rural setting and resides in urban home.

Q.3.5. Occupation; what do you do for a living?

a) Self Employed.

b) Peasant.

c) Employed.

d) Unemployed.

e) Other (Specify):

Q.3.6. What is your religious affiliation?

- a) Christian.
- b) Buddhist.
- c) Islam.
- d) Pagan.

Q.3.7. What is your population type?

- a) Sex Worker.
- b) General population.
- c) Adolescent and young women.
- d) Fisher Folk.
- e) Uniformed forces.
- f) *Boda Boda* rider.
- g) Male having sex with men.
- h) Truck driver.
- i) Other (Specify):

Q.3.8. What is your highest level of education?

- a) Primary level.
- b) College level.
- c) Uneducated.
- d) Secondary level.
- e) University level.
- f) Other (Specify):

Q.3.9. Prior to this study, have you ever participated in aPNS?

- a) Yes:
- b) No:

(Tick as appropriate).

SECTION 4: HIV RELATED CHARACTERISTICS.

Q.4.1. Strategy of identification. When you were first diagnosed to be HIV positive, where were you tested from?

- a) In patient department.
- b) Outpatient department.
- c) MCH/Maternity.
- d) Outreach.
- e) VCT.
- f) TB clinic.
- g) VMMC.
- h) Other (Specify):

Q.4.2. How long have you been on HIV care? (In years; if less than one year then the number of months)

- a) Less than 6 months.
- b) 6 months - 1 year.
- c) 1 year-2 years.
- d) 2 years - 4 years.
- c) More than 5 years.

Q.4.3. Are you sexually active?

- a) Yes:
- b) No:

(Tick where applicable).

Q.4.4. During your most recent sexual encounter, did you use protection (condom)?

- a) Yes.
- b) No.
- c) I do not remember.

Q.4.5. Please tell me the number of sexual partners you have had in the past 12 months.

- a) 1.
- b) 2.
- c) 3.
- d) 4 and more.

Appendix IV: Oboke Penjo (Dholuo Version)

Namba mapandi (Chanruok Namba kaka Koa 0001 nyaka 0423).

Nying kar thieth:

**OKANG' 1: YORE MAG LERONE JAHERA MIKONYO MOYIER KOD
LWENYMIYUDO EKIND JOMA OHERORE.**

Q.1.1. Ere yori ma iyiero ma itudorigo gi jaherani(jo) ne assisted partner notification services?

N/B: Yie iler yorego kuom jahera moro ka moro. Jakony Nonro onegoosomgi jaduoko yore mag aPNS mag tudruok kapodi ok jaduoko ochiwo yorene moyiero kuom jahera(jo) ka jahera(jo)

N/B: Yie iyier kuom yoregi:

Jathieth Lero kendo Gwelo jahera jatuo epim: Kuom yie mar jatuo mantie gi kute Ayaki, jahoch/ jathieth gocho ne jahera(jo) mar jatuo moriere, ka nyisogi ni gise elore ne kute Ayaki, kendo oyie timnegi hocho gi pim ka digi her kata kamano oketo maling'ling' jatuo mosepimo. **Matuo yango kendo gwelo kuom thulo momiye:** Jatuo donjo "ewinjruok mar kinde machuok" gi jahoch/ kata jathieth kuma gi yie mondo gi yang chal margine jaherane(jo) kendo chwalogi kar pim ekinde mar thuolo moro. Ka jaherane(jo) okobiro ne pim ethuolono, johoch/jothieth gocho ne jaherne moriere ni nyalo bedo ni ne gi elore ne kute Ayaki. Johoch/jothieth chiwo pim kute Ayaki kuom hero mar jotuo ne johera kendo ka gi rito maling'ling' mag jotuogi.

Jathieth bet kod jatuo gi jaherane seche myango chalne: Jathieth molony bet kod jatuo mantie gi kute Ayaki kod jaherane(jo) mondo ochiw kony ekinde ma jatuo yango chal mare. Jathiethno bende biro chiwo pim mar chal mar jaherane nono.

Jatuo yango chalne kendo ochwalo jaherane epim: Jatuo kawo misigo mar yango

cahal mare ne jaherane(jo) kendo ojiwogi mondo gidhi epim. Mae itimo pile ka itiyo gi barua mar gwelo kata andike mar chwalo ng'ato ne pim.

Gweth kaka owijore.					
Yore miyiero mag tudruok giJahera(jo).	Jahera 1	Jahera 2	Jahera 3	Jahera 4	Jahera 5
a) Jathieth Lero kendo Gwelo jahera jatuo epim.					
b) Jatuo yango kendo gwelo kuom thulo momiye.					
c) Jathieth bet kod jatuo gi jaherane seche myango chalne.					
d) Jatuo yango chalne kendo ochwalo jaherane epim.					
e) Mamoko (Ler e kar box mar ndiko mochimore gi Jahera).					

Q.1.2. Bende isega yudo lweny koa kuom joherani Ee:..... Ooyo (Gweth kak owinjore).

Ka Ee, kuom jahera(jo) ma isechiwo, mane kuomgi ma keloga ranyisi mar lweny/ katayot mondo ogol lweny ka itudori kode kendo yango chal mari ne gin kendo nyisogi ber mar ng'eyo chal margi?

N/B: Keti Y kuom jogo mabiro gi ranyisi mag lweny kendo N kuom jogo ma okbigiranyisi mar jalweny.	
Jahera.	Duoko.
Jahera 1	
Jahera 2	
Jahera 3	
Jahera 4	
Jahera 5	

Q.1.3. Ka Ee ne Q.1.2. matie malo ka en lweny kido mane mane yudore ekindi gijaherani(jo) ka iketo Y?

Gweth kama owinjore.			
Jahera.	Lweny e chiwo hera	Goch gi gwech	Dondruok makelo paro
Jahera 1			
Jahera 2			
Jahera 3			
Jahera 4			
Jahera 5			

(Gweth kaka owijore).

OKANG' 2: RAGENG' MAG YORE LERONE JAHERA MIKONYO.

Q.2.1. Ang'o modiki pinyka malero maber gima omiyo inyalo weyo ma ok indikojaherani(jo) eyore leroni Jahera Mikonyo?

Gweth kama owinjore.					
Gima omiyo ok indikoJaherani(jo).	Jahera 1	Jahera 2	Jahera 3	Jahera 4	Jahera 5
a) Luoro gi Akweda.					
b) Luoro werruok.					
c) Luoro Lweny.					
d) Luoro kawo richo.					
e) Kwanruok jaricho.					
f) Mamoko (Ler e kar box mar ndiko mochimore gi Jahera).					

Q.2.2. Ang'o moler pinyka manyiso maber gima nyalo jiwi mondoindiki jaherani(jo)ne yore leroni Jahera Mikonyo?

- a) Dwaro Yango elela.
- b) Kony Jahera (jo) echopo epim mar chal margi mar Kute Ayaki.
- c) Rito ngima Jahera (jo).
- d) Mamoko (Ler):

Q.2.3. Bende ing'eyo ber moro amora mar yore leroni Jahera Mikonyo?

- a) Ee:
- b) Ooyo:

(Gweth kaka owijore).

Q.2.4. Ka Ee gin mage ma iparo ni bedo ber maduong mar yore leroni Jahera Mikonyo?

- a) Pim mar kute Ayaki kod chwalo malo ng'eyo chal mari ne kute Ayaki.
- b) Ochwalo malo joma irwako ethieth mar kute Ayaki.
- c) En yo ma in gi adiera efuenyo joma nigi kute Ayaki.
- d) Ogeng'o landruok mar kute Ayaki.
- e) Mamoko (Ler).....

Q.2.5. Be ing'eyee ragen'g moro amora ne yore leroni Jahera Mikonyo?

- a) Ee:
- b) Ooyo:

(Gweth kaka owinjore).

Ka Ee, yie iwach mang'eny ming'eyo.

Rageng' ne aPNS.	Dwuoko (Gweth duto maen).
Achaya kod Wich kuot.	
Luoro kuom lalo nyadhi mari kod kony eyor kweyo chunyi.	
Luoro gi Akweda.	
Luoro Lweny.	
Luoro tingo richo.	

Kwanruok Jaricho.	
Luoro werruok.	
Bedo ni ok ing'eyo jaherani.	
Bedo maonge yore mag tudruok gi Jahera(jo).	
Tamruok kendo bedo maonge nyalo nyiso jahera.	
Nyalo eyo mopogore e osiep Kaka geno kuom jaherani kuom kony mar pesa/ kata konyo jaherani eyor chiwo maromenda.	
Tije makonyo ma ok mori.	
Jotij mag Thieth ma Ochayo ji.	
Luoro kuom kano weche e maling'ling'.	
Tamruok kuom chal mari kuom kute Ayaki.	
Mamoko (Ler):	

OKANG' 3: WECHE MOTUDORE GI LOGANDA.

Q.3.1. Hik jalno:

- a) Higni 16-20. d) Higni 31-35. g) Higni 46-50.
b) Higni 21-25. e) Higni 36-40. h) Higni 51-55.
c) Higni 26-30. f) Higni 41-45. i) Higni 56+.

Q.3.2. Kit Chuech..... (Gweth kakadwarore).

- a) Dichuo. ()
b) Dhako. ()

Q.3.3. Weche kenya.....

- a) Kendi.

- b) Osekendo.
- c) Bedo wuowo.
- d) Opogore.
- e) Weruok Chuth.
- f) Chi Liel.
- g) Chuo Liel.
- h) Mamoko (Ler):

Q.3.4. Kar Dak.....

- a) Odak chuth egweng'.
- b) Odak Chuth e boma.
- c) Tiyo e boma to odak egweng'.
- d) Tiyo egweng' to odak eboma.

Q.3.5. Ang'o ma itimo mar konyruok?

- a) Indikori kendi.
- b) Ondiki.
- c) Japur mar chiemo.
- d) Onge Tich.
- e) Mamoko (Ler):

Q.3.6. Ilemo edini mane?

- a) Jo Christo.
- b) Jo Buda.
- c) Jo Salam.
- d) Japiny.

Q.3.7. Kit Oganda?

- a) Tije mag Terruok.
- b) Chuo materore gi chuo.
- c) Joma tiyo gi yadh mer michuoyo.
- d) Jomatiyo e arita kwe kod chik.
- e) Joriemb Loche.
- f) Rowere kod nyiri matindo.
- g) Oganda mokikore.
- h) Jolupo.
- i) Joriemb Apiko.
- j) Mamoko (Ler):

Q.3.8. Sombi mamalo mogik ochopo kanye?

- a) Primary.
- b) Secondary.
- c) College.
- d) Mbalariany.
- e) Okisomo.
- f) Mamoko (Ler):

Q.3.9. Kopogore gi nonroni, be isega chiwri ne nonro e aPNS?

- a) Ee:
- b) Ooyo:

(Gweth kakadwarore).

**OKANG' 4: TIMBE MATUDORE GI JA AYAKI KOD YORE MOCHAN
MAGTERRUOK.**

Q.4.1. Okenge mag fuenyogi. Chieng' mane opimi moyudi mokuongo ni in gi kuteAyaki, ne opimi kanye?

- a) Ka an ewuod.
- b) Odiochieng' mar thieth mapile.
- c) Ka Pim mar Chal mari.
- d) Chieng' Tero nyange.
- e) Kar pim mag mine mayach/ gi nyithindo.
- f) Limbe mantie oko.
- g) Klinik mar Kahera.
- h) Mamoko (Ler):.....

Q.4.2. Kuom thuolo marom nadi ma isebedo erit mar kute Ayaki? (e higni; katin nehiga kara kwan dweche).

- a) Matin ne dweche 6.
- b) Dweche 6 - Higa 1.
- c) Higa 1 - Higni 2.
- d) Higni 2 – 4.
- e) Mohingo Higni 5.

Q.4.3. Bende dendi ngima ne chiwo hera?

- a) Ee:
- b) Ooyo:

(Gweth kakaowinjore).

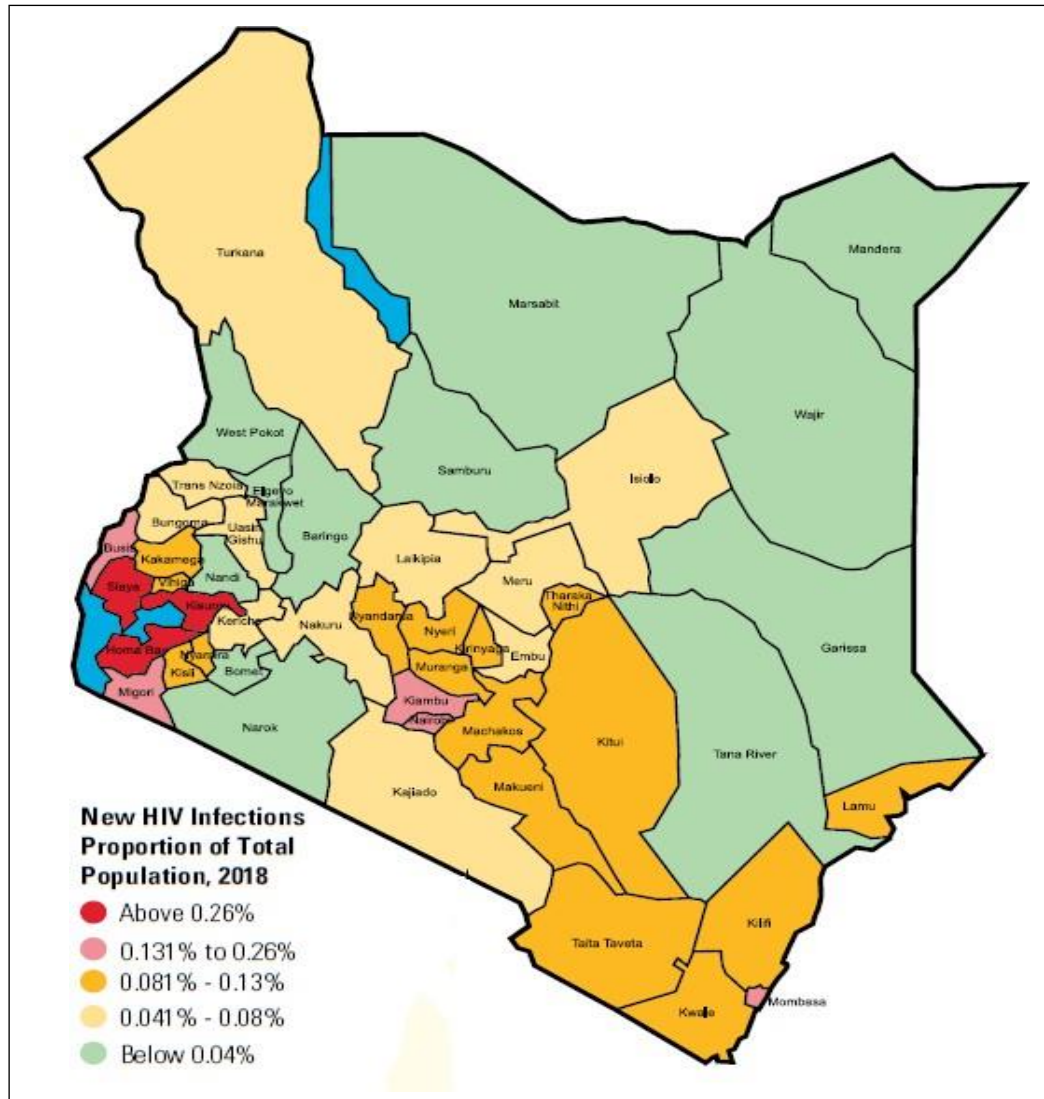
Q.4.4. Ekinde mag Terruoknni manyochani bende ne itiyo gi rageng' (condom)?

- a) Ee:
- b) Ooyo:
- c) Ok apar:

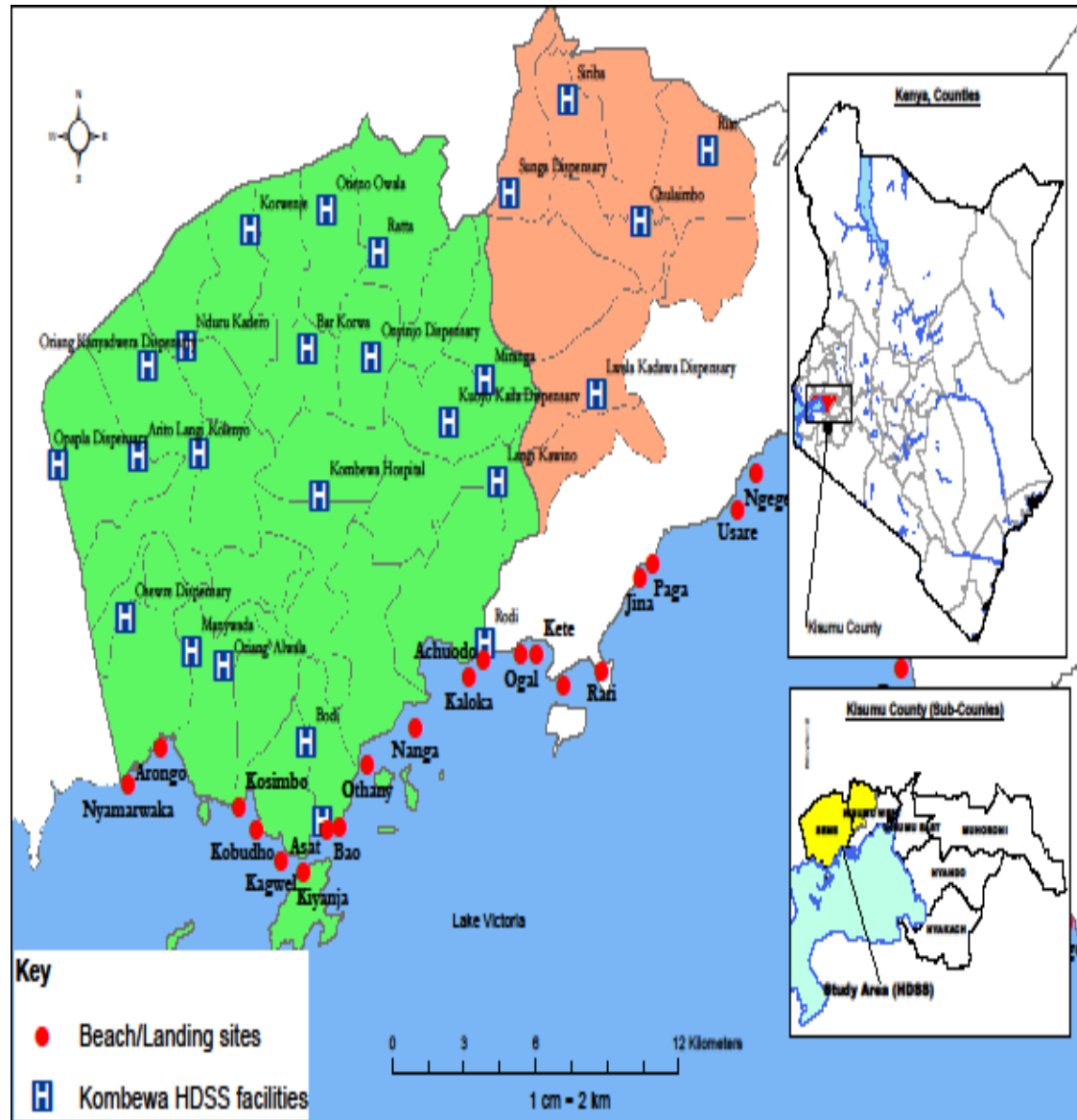
Q.4.5. Yie inyisa kwan johera ma isebedogo ethuolo mar dweche 12.

- a) 1.
- b) 2.
- c) 3.
- d) 4 gi mamoko.

Appendix V: Map of Kenya showing Total New Infections, by County.



Appendix VI: Map showing HDSS health facilities in Seme and Kisumu West sub counties.



Appendix VII: Translation certificate for consent form

SOP Title: Translation and Certification of Translation of Study Documents	SOP No. KSM 202
Effective Date: 30 November 2015	Version 07
	Page 1 of 1

Attachment 1

**KENYA MEDICAL RESEARCH INSTITUTE
WALTER REED PROJECT
P.O. BOX 54- 40100
KISUMU**

Certification of Translation

Study Title: Determinants of Assisted Partner Notification Services for HIV testing among adults on HIV care in Seme and Kisumu West Sub Counties .

Principal Investigator: **Mr. Anangwe Munala Samson**

To Whom It May Concern:

I, Frederick Atieno Ayayo, do hereby testify that I translated the **English Version # 1.0** dated **01May 2019** of the Informed Consent Form into **Luo** for the above-named study. I certify that this is an accurate and true translation to the best of my ability.

SIGNED:  DATE: 09 / May / 2019

ADDRESS: 54-40100 Kisumu TEL NO.: 0714501654

EMAIL ADDRESS: frederick.atieno@usamru-k.org

I, Beatsie Akinyi Orando, do hereby testify that I reviewed the translation of the **Luo Version # 1.0** dated **01May 2019** of the Informed Consent Form . I have compared it with the **English version #1.0**, of the same document, and found that the translation indicates that the Informed Consent Form for the above named study has been properly translated into Luo.

SIGNED:  DATE: 09 / May / 2019

ADDRESS: 54 Kisumu TEL NO.: 0705359393

EMAIL ADDRESS: beatsie.orando@usamru-k.org

Appendix VIII: Translation certificate for questionnaire.

SOP Title: Translation and Certification of Translation of Study Documents	SOP No. KSM 202
Effective Date: 30 November 2015	Version 07
	Page 1 of 1

Attachment 1

**KENYA MEDICAL RESEARCH INSTITUTE
WALTER REED PROJECT
P.O. BOX 54- 40100
KISUMU**

Certification of Translation

Study Title: Determinants of Assisted Partner Notification Services for HIV testing among adults on HIV care in Seme and Kisumu West Sub Counties

Principal Investigator: **Mr. Anangwe Munala Samson**

To Whom It May Concern:

I, Fredrick Atieno Ayayo, do hereby testify that I translated the **English Version # 1.0 dated 01 May 2019** of the Questionnaire, into **Luo** for the above-named study. I certify that this is an accurate and true translation to the best of my ability.

SIGNED:  DATE: 09, May, 2019

ADDRESS: 54-40100 Kisumu TEL. NO.: 0714501654

EMAIL ADDRESS: fredrick.atieno@usamru-k.org

I, Beatrice Akinyi Orando, do hereby testify that I reviewed the translation of the **Luo Version # 1.0 dated 01 May 2019** of the Questionnaire. I have compared it with the **English version #1.0**, of the same document, and found that the translation indicates that the Questionnaire for the above named study has been properly translated into Luo.

SIGNED:  DATE: 09, May, 2019

ADDRESS: 54 Kisumu TEL. NO.: 0705359393

EMAIL ADDRESS: 54 Kisumu

Appendix IX: Ethical approval letter.



Telegrams: "MEDICAL", Kisumu
Telephone: 057-2020801/2020803/2020321
Fax: 057-2024337
E-mail: ercjootrh@gmail.com
When replying please quote

**JARAMOGI OGINGA ODINGA TEACHING &
REFERRAL HOSPITAL
P.O. BOX 849
KISUMU**

ERC.IB/VOL.1/582

6th June, 2019

Ref:

Date:

Anangwe Munala Samson

Dear Anangwe,

**RE: REQUEST FOR ETHICAL APPROVAL TO UNDERTAKE A STUDY TITLED:
"DETERMINANTS OF ASSISTED PARTNER NOTIFICATION SERVICES FOR HIV
TESTING AMONG ADULTS ON HIV CARE IN SEME AND KISUMU WEST SUB
COUNTIES"**

The JOOTRH ERC reviewed your protocol and found it ethically satisfactory. You are therefore permitted to commence your study immediately. Note that this approval is granted for a period of one year (w.e.f. 6th June, 2019 to 6th June, 2020). If it is necessary to proceed with this research beyond approved period, you will be required to apply for further extension to the committee.

Also note that you will be required to notify the committee of any protocol amendment(s), serious or unexpected outcomes related to the conduct of the study or termination for any reason.

In case the study site is JOOTRH, kindly report to the Chief Executive Officer before commencement of data collection.

Finally, note that you will also be required to:-

- Share the findings of the study in both hard and soft copies upon completion.
- Give the progress of the study as you begin every quarter to the end of the study.

The JOOTRH – IERC takes this opportunity to thank you for choosing the Institution and wishes you the best in your future endeavours.

Yours sincerely,

for


WILBRODA N. MAKUNDA
SECRETARY - IERC
JOOTRH - KISUMU



Appendix X: Kisumu County Director of Health data collection approval letter.

COUNTY GOVERNMENT OF KISUMU

Telegram: "TRO(MED)"
Tel: 254-057-2092000
Fax: 254-057-2092075
E-mail: kisumcdh@gmail.com



County Director of Health,
Kisumu,
P. O. Box 791-40100,
KISUMU.

DEPARTMENT OF HEALTH

REF: GN, 153/VOL III/615 Date: 24/06/2019

Anangwe Munala Samson

RE: APPROVAL TO CONDUCT RESEARCH ON DETERMINANTS OF ASSISTED PARTNER NOTIFICATION SERVICES FOR HIV TESTING AMONG ADULTS ON HIV CARE IN SEME & KISUMU WEST SUB COUNTIES

We are in receipt of the request for research approval.

The County Department of Health has reviewed the proposal to conduct the above study and support it's implementation.

This office has no objection on the same and grants you permission to continue with research for a period of one year within the two Sub Counties and share your findings with this office in both hard & soft copy after the study.

By a copy of this letter kindly accord him your necessary cooperation.

Approved
Permission granted
flushed
24/06/19

Approved
Dr. Owan
Kisumu

Approved
04 JUL 2019

Approved
17/2019

Dr. Onyang'o D. O.
County Director of Health
Kisumu County

COUNTY DIRECTOR OF HEALTH KISUMU

MEDICAL SUPERINTENDENT CHULAIMBO COUNTY HOSPITAL
DATE: 26/06/2019

MEDICAL SUPERINTENDENT SEME SUB-COUNTY
P. O. Box 60,
KISUMU WEST SUB-COUNTY

MEDICAL SUPERINTENDENT KOMEWA COUNTY HOSPITAL
P. O. Box 60,
KISUMU WEST SUB-COUNTY

Appendix XI: Kisumu County Commissioner research authorization letter.



THE PRESIDENCY

MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telephone: Kisumu 2022219/Fax: 2022219
Email: ckisumucounty@gmail.com

COUNTY COMMISSIONER
KISUMU COUNTY
P.O. BOX 1912-40100
KISUMU

Ref: CC/KC/RES/VOL.III (204)

Date: 1st August, 2019

The Deputy County Commissioners
KISUMU WEST SUB-COUNTY
SEME SUB-COUNTY

RESEARCH AUTHORIZATION: ANANGWE MUNALA SAMSON

Reference is made to a letter from the National Commission for Science, Technology and Innovation No. NACOSTI/P/19/74081/31229 dated 25th July 2019 on the above subject matter.

The above named is a student of Jomo Kenyatta University of Agriculture and Technology. He has been authorized to carry out a research on "*Determinants of assisted partner notification services for HIV testing among adults care in Seme and Kisumu West Sub-Counties.*" The research period ends on 25TH July 2020.

Kindly accord him any assistance that he may need.


ABDI M. HASSAN
COUNTY COMMISSIONER
KISUMU COUNTY

Copy to:

Anangwe Munala Samson
Jomo Kenyatta University of Agriculture and Technology
P.O. Box 62000-00200
NAIROBI.

Appendix XII: Kisumu County Director of Education research authorization letter



REPUBLIC OF KENYA

**MINISTRY OF EDUCATION
State Department of Early Learning & Basic Education**

Telegrams: "schooling", Kisumu
Telephone: Kisumu 057 - 2024599
Email: countyeducation.kisumu@gmail.com

COUNTY DIRECTOR OF EDUCATION
KISUMU COUNTY
PROVINCIAL HEADQUARTERS NYANZA
3RD FLOOR
P.O. BOX 575 - 40100
KISUMU

When replying please quote

REF: CDE/KSM/GA/19/3/VOL.IV/16

1st August, 2019

TO WHOM IT MAY CONCERN

**RE: RESEARCH AUTHORIZATION
ANANGWE MUNALA SAMSON - NACOSTI/P/19/74081/31229**

The above named is from Jomo Kenyatta University of Agriculture & Technology

This is to certify that he has been granted authority to carry out research on "*Determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu west sub Counties, Kisumu County, Kenya*" for the period ending 25th July, 2020.

Any assistance accorded to him to accomplish the assignment will be highly appreciated.

EVANS O. MOSE
For: COUNTY DIRECTOR OF EDUCATION
KISUMU COUNTY

Appendix XIII: NACOSTI research authorization letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/74081/31229**

Date: **25th July, 2019**

Anangwe Munala Samson
Jomo Kenyatta University of
Agriculture and Technology
P.O. Box 62000-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***“Determinants of assisted partner notification services for HIV testing among adults on HIV care in Seme and Kisumu West Sub Counties.”*** I am pleased to inform you that you have been authorized to undertake research in **Kisumu County** for the period ending **25th July, 2020.**

You are advised to report to **the County Commissioner, the County Director of Health Services, and the County Director of Education, Kisumu County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA., MSc, MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Kisumu County.

The County Director of Education
Kisumu County.

National Commission for Science, Technology and Innovation is ISO9001:2008 Certified

Appendix XIV: NACOSTI research permit.

THIS IS TO CERTIFY THAT:
MR. ANANGWE MUNALA SAMSON
of JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY,
0-50307 Luanda, has been permitted to
conduct research in Kisumu County

on the topic: 'DETERMINANTS OF
ASSISTED PARTNER NOTIFICATION
SERVICES FOR HIV TESTING AMONG
ADULTS ON HIV CARE IN SEME AND
KISUMU WEST SUB COUNTIES

for the period ending:
25th July, 2020

[Signature]
Signature

Permit No : NACOSTI/P/19/74081/31229
Date Of Issue : 25th July, 2019
Fee Received :Ksh 1000

[Photo of Mr. Anangwe Munala Samson]
Director General
National Commission for Science,
Technology & Innovation

ORIGINAL

OFFICIAL RECEIPT

AC 27053

Station *Nandi* **Date** *29/07/2019*

RECEIVED from *Anangwe Munala Samson*

Shillings *One thousand only*

cents *00*

on account of *Research permit fee*

Vote *P/B*

Head *A-T-A*

Cash *Dred Dept*

Cheque No. *[Signature]*

Signature of Officer receiving remittance

NACOSTI

USD *1000*

Kshs *1000*

AC

No.

Appendix XV: JKUAT Board of Postgraduate Studies research approval letter



**JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
DIRECTOR, BOARD OF POSTGRADUATE STUDIES**

P.O. BOX 62000
NAIROBI – 00200
KENYA
Email: director@bps.jkuat.ac.ke

TEL: 254-67-5870000/1-5

REF: JKU/2/11/TM310-C012-6995/2015

22ND JULY, 2019

MUNALA ANANGWE SAMSON
C/o SoPH
JKUAT

Dear Mr. Anangwe,

RE: APPROVAL OF MSc. RESEARCH PROPOSAL AND OF SUPERVISORS

Kindly note that your MSc. research proposal entitled: “DETERMINANTS OF ASSISTED PARTNER NOTIFICATION SERVICES FOR HIV TESTING AMONG ADULTS ON HIV CARE IN SEME AND KISUMU WEST SUB COUNTIES.” has been approved. The following are your approved supervisors:-

1. Dr. Dennis G. Magu
2. Dr. Fredrick O. Otieno


PROF. MATHEW KINYANJUI
DIRECTOR, BOARD OF POSTGRADUATE STUDIES
Copy to: Dean, SoPH

/cm



JKUAT is ISO 9001:2015 and ISO 14001:2015 Certified
Setting Trends in Higher Education, Research, Innovation and Entrepreneurship



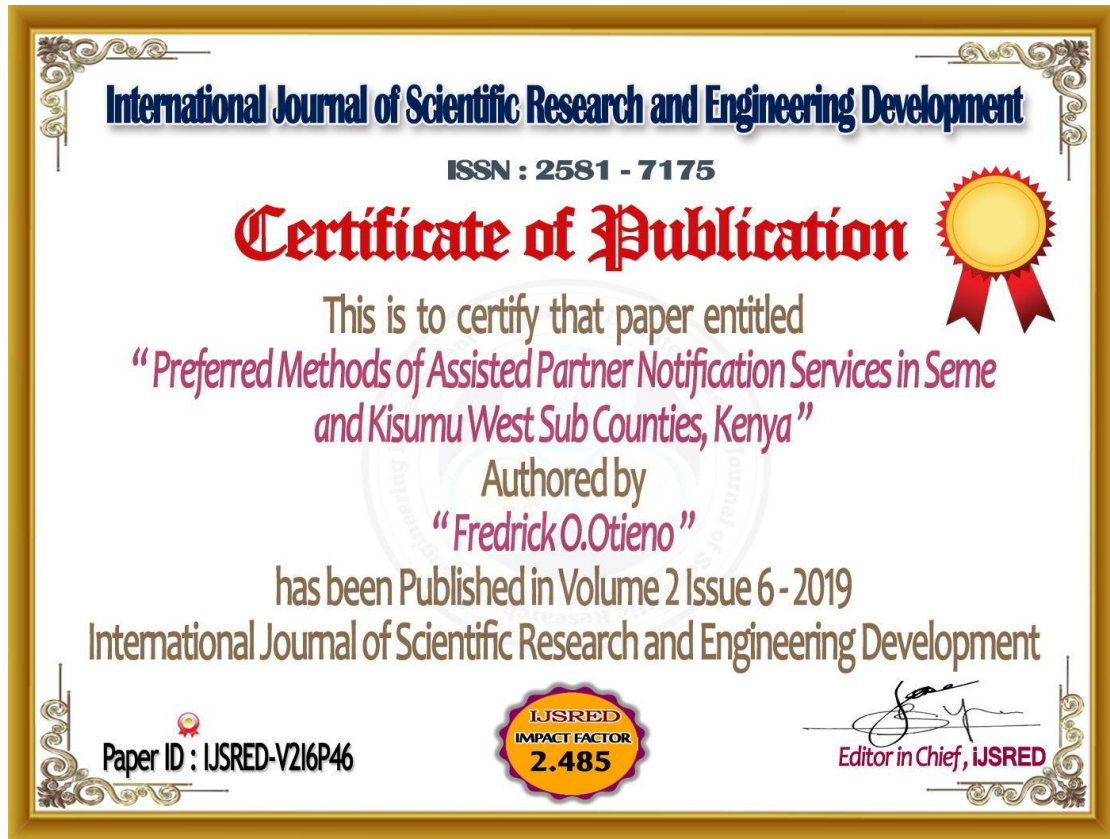
Appendix XVI: IJSRED Publication certificate- Anangwe Munala Samson



Appendix XVII: IJSRED Publication certificate- Dr. Dennis G. Magu



Appendix XVIII: IJSRED Publication certificate- Dr. Fredrick Otieno



Appendix XIX: IJSRED Publication: Preferred Methods of Assisted Partner Notification Services in Seme and Kisumu West Sub Counties, Kenya

International Journal of Scientific Research and Engineering Development– Volume 2 Issue 6, Nov- Dec 2019

Available at www.ijared.com

RESEARCH ARTICLE

OPEN ACCESS

Preferred Methods of Assisted Partner Notification Services in Seme and Kisumu West Sub Counties, Kenya

AnangweMunala Samson, Dennis G. Magu, Fredrick O. Otieno.

Jomo Kenyatta University of Agriculture and Technology

anangwems@gmail.com

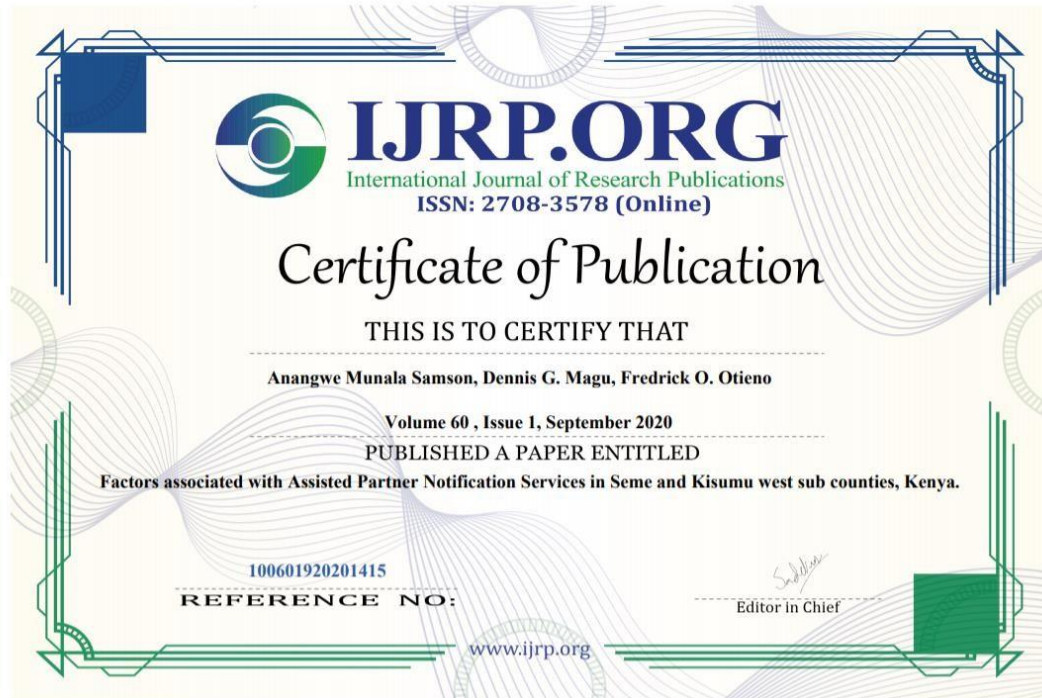
Abstract

No one method of partner notification is universally preferred. Preferences differ by population, age (specifically young people) and partner type (primary or non-primary). We aim to examine the preferred methods of assisted partner notification service among HIV positive clients in Kisumu county. We conducted a descriptive cross-sectional research study in 3 health facilities on a sample of 423 HIV positive clients. Findings indicated that 40.4% of the participants indicated that the preferred method of referral was provider referral. However, there existed no statistical association between participation in PNS and the preferred methods.

1 INTRODUCTION

Assisted partner notification service (aPNS) is a targeted public health strategy used to curb the spread of sexually transmitted infections (STIs) by tracking, testing and treating infected partners of index clients. This public health strategy entails a health worker interviewing persons identified with an 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 [1]. Despite the strategy being resource intensive, studies suggest that aPNS can be cost-effective and cost saving as a result of HIV prevention potential and the consequent cost of HIV care [2]. Findings from a Cameroonian aPNS program indicated identification of one new case of HIV in every 3.2 index cases interviewed [3]. Findings from a Malawian small (n=245) randomized controlled trial within an STI clinic, indicated a two fold increase/doubling of the number of sexual partners testing for HIV as a result of

Appendix XX: IJRP.ORG Publication certificate- Anangwe Munala Samson, Dr. Dennis G. Magu and Dr. Fredrick Otieno



Appendix XXI: IJRP.ORG Publication: Factors associated with Assisted Partner Notification Services in Seme and Kisumu West Sub Counties, Kenya

Available online at www.ijrp.org



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International Journal of Research Publications
ISSN: 2708-3578 (Online)

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Volume-60, Issue-1, September 2020
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Accepted and Published Manuscript

Factors associated with Assisted Partner Notification Services in Seme and Kisumu west sub counties, Kenya.

Anangwe Munala Samson, Dennis G. Magu, Fredrick O. Otieno

PII : Anangwe Munala Samson.100601920201415
DOI: 100601920201415
Web: <http://ijrp.org/paper-detail/1416>

To appear in: International Journal of Research Publication (IJRP.ORG)

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Published date: 08 Oct 2020

Please cite this article as: Anangwe Munala Samson, Dennis G. Magu, Fredrick O. Otieno , Factors associated with Assisted Partner Notification Services in Seme and Kisumu west sub counties, Kenya. , International Journal of Research Publication (Volume: 60, Issue: 1), <http://ijrp.org/paper-detail/1416>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this final version of the manuscript.

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