Original Research Article

Determinants of Community ~~Hiv~~ HIV Index Testing Among ~~Hiv~~ HIV Index Clients In Yirol West County, South Sudan

ABSTRACT

Background: Index case HIV/AIDS testing is a useful approach for addressing and enhancing the efficiency and yield of testing in high-risk populations. Among the high-risk groups for contracting HIV/AIDS are partners and relatives of those existing with the disease

Objective: The research aimed to establish the determinants of community HIV index testing among HIV index clients in Yirol West County, South Sudan.

Method: The research employed an analytical cross-sectional research strategy, where a mixed approach entailing both questionnaire guides and interview guides were utilized. The sample size was premeditated using Fischer's formula where 252 study respondents were recruited in this study. The chi-square test and regression (logistic analysis) were applied to identify the determinants of community HIV patients index testing. For qualitative data, thematic analysis was carried out.

Results: The utilization of community HIV index testing services was low in this study with only 24.2 % of the study respondents reporting utilizing these health services. Discussing HIV testing and counseling services(OR=3.3,95%CI=0.11-0.84), counseling to bring family members for HIV testing(OR=1.9,95%CI=0.29-0.97), and education level(OR=6.195%CI=0.04-0.66) was found to increase the odds of utilizing community HIV index testing. The presence of stigma(OR=8.3,95%CI=0.61-0.24) and lack of trust(OR=2,95%CI=0.27-0.96) among healthcare providers reduced the odds of utilizing community HIV index testing

Conclusion: The utilization of community HIV index testing services was low. Discussing HIV testing and counseling services, the status of marriage, gender, age, counseling to bring family members for HIV testing .and education level were found to increase the odds of utilizing community HIV index testing while the presence of stigma and discrimination, and duration lived with a partner lack of trust among health care providers reduced the odds of utilizing community HIV index testing. There is a need to put the necessary measures to enhance the increased uptake of community HIV index testing services

***Keywords**: Disclosure of HIV status, HIV Index testing, ART, HIV/AIDS.*

1. INTRODUCTION

Worldwide 37.7 million individuals remained living with HIV/AIDS in 2020 and 1.5 million individuals became recently infected with HIV/AIDS in 2020 and roughly individuals deceased from AIDS-associated sicknesses in 2020 alone estimated that 27.5 million persons remained receiving ARVs therapy in 2020 and 79.3 million individuals have developed diseased with HIV from the time when the start of the HIV widespread[1]. Since then, it is estimated that around 36.3 million individuals have deceased from HIV/AIDS-associated infections from the time when the start of widespread[1]. Of the 37.9 million persons alive with HIV/AIDS worldwide, comprising 25.6 million live in Sub-Saharan Africa. 21% continue ignorant of their HIV/AIDS conditions[1].

HIV screening for HIV index clients approach has an enormous possibility to progress HIV situations, however, revelation in relations concluded counselors assistance[2]. Assuming the situation possible, it is serious to overwhelm the above-mentioned blockades and yield the benefit of the HIV/AIDS screening of individuals in the households[3]. Communal HIV screening through beleaguered methods to adjacent the break of screening HIV chance misused by health workers in the facility is very important and paramount.

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HIV and AIDS continue to be a public health priority in the Republic of South Sudan with an incidence of 2.5% amongst grownups old 15-49 years[4]. The country has made some progress with 24% of the estimated 190,000 people living with HIV having been tested and know their status and 67% of those who know their status initiated on life long saving antiretroviral therapy[5]. However, there is concern about the increasing trend in the number of new HIV contagions and AIDS-associated deaths. In partnership with development partners, the Ministry of Health continues to scale up all-inclusive HIV/AIDS inhibition, attention, and dealing, in addition to providing facilities partners' program implementation plus public health approaches[5]. Currently, there are more than 90 functional health facilities providing ART in the country[5]. Screening people living with HIV/AIDS as their index clients additional stipulates an occasion intended for supported revelation in a household scenery, faster understanding amongst HIV counselors HIV clients, then advanced HIV/AIDS positivity proportion.

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It is estimated that there are 194,744 individuals with HIV in the Republic of South Sudan, much as 24% percent of the total population ~~don't~~ do not know their HIV status[6]. In Yirol West County, about 85% of the community members ~~don't~~ do not know their HIV status while PLHIV have a stigma to elucidate their biological and sexual partners due to intimate partner violence that results in isolation and divorce of the partner and these are due to the stigmatization of this community in particular in South Sudan[5]. Despite several studies conducted in the area of HIV index testing, few studies have focused on specific factors for community HIV index testing and especially in poor-income nations. This study comes when Sudan is facing severe political and climate crises which have led to poor prioritization of the health sectors. Therefore this study aims to determine specific determinants for community index HIV testing among HIV index clients in Yirol West County, South Sudan.

2. METHODOLOGY

2.1 Research Design

The research employed an analytical cross-sectional research strategy with qualitative component??. This was essential since the study aimed at determining aspects influencing the use of community HIV index testing amenities.

2.2 Study Area

This investigation was executed in Yirol West Region, South Sudan. The county occupies an area with a total population of (the total population of Yirol town is 155,870 (Sudanese Census,2008) and some of the population are on ARVs for care and treatment. The population has access to HIV services across the county in which HIV services are rendered free.

2.3 Study Population

The study targeted HIV patients' index who are currently active on ARVs without any interruptions in the treatment for the last three months.

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2.4 Sampling Technique

Yirol West County was purposively selected. The county has 5 Payams with varying sizes and populations. Based on this, the researcher adopted a proportionate stratified sampling technique where respondents were recruited according to population size, where the researcher picked a predetermined number of respondents from each health facility whose HIV patients index clients had been elicited. In the selection of the HIV patients, the researcher chose at random the HIV patients to be interviewed until the desired sample size was achieved. The sample size was premeditated using Fischer's formula where 252 study respondents were recruited in this study.

2.5 Data Collection Methods and Instruments

This study employed a mixed approach where both questionnaire guides and interview guides were utilized as tools for data gathering in this investigation. the tools covered the following aspects of utilization of community HIV index services, social demographic, family-related and health-facility factors influencing the utilization of community HIV index services.

2.6 Validity and Reliability

Twenty-six study participants were taken into consideration. The coefficient alpha was used to assess internal consistency, while SPSS version 26 was used to assess dependability. The results of 0.87 indicated that the tools were trustworthy. A specialist in virology pretested interview questionnaires to increase the accuracy of data-gathering instruments.

2.7 Data Analysis

Data obtained were subjected to daily checking to identify mistakes and rectify them. This ensured that the data obtained was of good quality. Quantitative data representing the population was described using inferential and descriptive statistics. Descriptive statistics included percentages and frequencies whereas inferential statistics were used to decide the level of interaction between the research variables where a statistical significance was set at (P<0.05). The chi-square test was used for categorized data Moreover, regression (logistic analysis) was applied to identify the determinants of community HIV patients index testing. Finally, for qualitative data thematic analysis was carried out.

3. RESULTS

3.1 Utilization of Community HIV Index Testing

As indicated in Figure 1 below, close to a quarter(24.2%) of the study partakers reported having utilized community HIV index testing, while more than three-quarters(75.8%) of the study respondents reported having never utilized community HIV index testing services

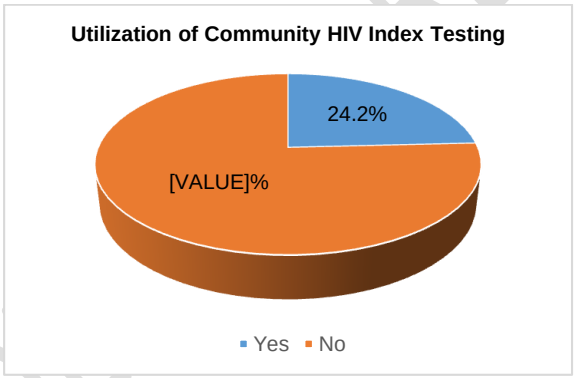

Figure 1: utilization of community HIV index testing

3.2 Social Demographic Characteristics of the Study Respondents

As indicated in Table 1 below, the majority(70.2%)of the study partakers in this study were Christians. More than half(52.4%) of the study partakers were earning below the poverty line. Close to a quarter of the study partakers had attained a secondary level of education while more than half(57.9%) of the study partakers reported being married. The majority (70.6%) of the investigation partakers in this research were females, while only a few(16.7%)of the study respondents were aged 40-49 years.

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Table 1: Social Demographic Characteristics of the Study Partakers

Variables	Categories	Frequency	Valid Percentage%
Age	18-29	96	38.1
	30-29	96	38.1
	40-49	42	16.7
	50-59	18	7.1
Gender	male	74	29.4
	female	178	70.6
Marital status	single	73	29
	married	146	57.9
	windowed	26	10.3
	divorced	7	2.8
Educational level	Never been to school	71	28.2
	primary	54	21.4
	secondary	76	30.2
	vocational	30	11.9
	tertiary	21	8.3
Income	Below poverty line	132	52.4
	Above poverty line	120	47.6
Religion	Christian	177	70.2
	muslim	75	29.8

3.3 Social Demographic Factors Associated with Community HIV Index Testing

As indicated in Table 2 below, The following variables revealed a significant relationship with Community HIV Index Testing utilization when the bivariate analysis was done; Age(X^2*=23.731, df=3,p*=<0.001*), education level (X^2*=36.07,df=4, p=<0.001*), gender(X^2*=5.238, df=1, p=0.02*) and marital status(X^2=12.637, *df=3, p=0.05*). None of the following variables revealed a significant association with Community HIV Index Testing; religion(X^2 *=0.074, df=1, p=0.79*) and income (X^2=0.331, *df=1,* p=0.57).
The logistic regression was then used to model significant social demographic factor variables. From this research, study respondents aged 18-29 years were 2.7 times more likely to utilize community HIV index testing as likened to HIV index clients aged 50-59 years. Furthermore, study respondents who had a secondary education level were 6.1 less likely to utilize community HIV index testing services as compared to those who had a tertiary education level, male gender were 2.3 times more likely to use community HIV index testing services as likened to their colleagues and lastly married couples were 1.8 times more likely to utilize community HIV index testing services as compared to divorced couples.

Table 2: Bivariate and Multivariate Logistic Regression on Social Demographic Factors Associated with Community HIV Index Testing

Independent Variables	Categories	Statistical Significance (Chi-Square Test)	Logistic regression OR,95%CI	Logistic regression P-value
Age	18-29	X^2=23.731	2.7(.58-12.25)	0.02

	30-39	df=3	.59(.14-2.56)	.48
	40-49	p*=<0.001	8.6(1.26-58.28)	.33
	50-59		Ref	
Gender	Male	X^2=5.238	2.32(0.20-.92)	0.03
		df=1	Ref	
	Ref	p=0.02		
Marital status	Single	X^2=12.637	0.7(.05-10.75)	0.82
	Married	df=3	1.8(.02-3.23)	0.05
	Windowed	p*=0.005	0.2(.08-36.86)	0.28
	Divorced		Ref	
Educational level	Never been to school	X^2=36.07	1.12(.26-4.79)	.87
	Primary	df=4	1.36(.27-6.67)	.70
	Secondary	p*=<0.001		
			6.1(.04-.66)	.01
	Vocational		1(.19-5.73)	.97
			Ref	
	Tertiary			
Income	Below poverty line	X^2=0.331	-	-
	Above poverty line	df=1		
		p=0.57		
Religion	Christian	X^2=0.074	-	-
	Muslim	df=1		
		p=0.79		

3.4 Descriptive Statistics on Health Facility Factors

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The following section provides descriptive statistics on health facility factors. From this study, more than half(56%) of the study respondents reported lacking trust in antiretroviral treatment clinic staff. More than half(68.7%) of the study respondents reported being very convenient with regular working hours while

more than half(52.4%) of the research respondents stated not being counseled. Concerning Index clients' 1st HIV testing approach, more than half(54.6%) of the study respondents reported preferring provider-initiated counseling and testing while the majority(64.7%) of the investigation respondents preferred to be tested for HIV at a health facility.

3.5 Health Facility Factors Associated with Community HIV Index Testing

As indicated in Table 3 below, The following variables revealed a significant relationship with Community HIV Index Testing utilization when the bivariate analysis was done; preferred place of testing HIV(X^2=7.775, *df=2,* p=0.02), being counseled to bring families for HIV testing (X^2=5.484, *df=1,* p=0.01), having trust in ART clinic staff (X^2=6.903, *df=1,* p=0.009). None of the following variables revealed a significant association with Community HIV Index Testing; preferred time for testing of HIV (X^2=0.225, *df=2,* p=0.893) and the index client 1st HIV testing approach (X^2=0.441, *df=2,* p=0.80).

The logistic regression was then used to model significant health facility factor variables. From this research; lack of trust by HIV index clients in ART clinic staff was found to reduce the odds of using community HIV index testing amenities by 2. Study respondents who reported being counseled to bring families for HIV testing were 1.9 times more expected to utilize community HIV index testing as linked to their colleagues.

These results were in settlement with the qualitative data where one of the key informants noted that;

"*being counseled to bring relatives for HIV testing is a good measure to ensure there is effective community hiv index testing. It acts as a motivating factor for good protection and adherence to HIV treatment among affected family members*…"

Table 3: Bivariate and Multivariate Logistic Regression on Health Facility Factors Associated with Community HIV Index Testing

Independent Variables	Categories	Statistical Significance (Chi-Square Test)	Logistic regression OR,95%CI	Logistic regression P-value
Preferred testing place	Health facility based	X^2=7.775	0.9(.46-2.16)	.99
	Community-based	df=2	3.6(1.02-12.34)	.05
	Home-based	p=0.02	1.9(0.29-0.97)	.04
Index client 1st HIV testing approach	VCT	X^2=0.441	-	-
	PICT	df=2		
	ICT	p=0.80		

Counseled on HIV testing	Yes	X^2=5.484 df=1 p=0.01	1.9(.29-.97)	.04
	No		ref	
Preferred time for HIV testing	Regular hours	X^2=0.225 df=2 p=0.893	-	-
	Evening			
	weekend			
Trust in ART clinic staff	Yes	X^2=6.903 df=1 p=0.009	2(.27-.96)	0.03
	No		ref	

3.6 Descriptive Statistics on Family-related Factors

More than half(59.5%) of the investigation respondents stated having lived with their partner for more than five years. Regarding discussing HIV testing counseling services, the majority(79.4%) of the study respondents reported having discussed HIV testing counseling services, and more than three-quarters (75.8%) of the study respondents had not revealed their HIV standing to one of their family members. More than half(59%) of the study respondents reported utilizing assisted disclosure method and more than three quarter (75.4%)of the study respondents reported the absence of discrimination while more than half(61.9%) of the study respondents reported the absence of stigma, While close to three quarter(70.6%) of the study partakers described the presence of social support.

3.7 Family-related Factors Associated with Community HIV Index Testing

As indicated in Table 4 below, The following variables revealed a significant relationship with Community HIV Index Testing utilization when the bivariate analysis was done; the presence of social support (X^2=6.529*, df=1,* p=0.01), presence of stigma (X^2=47.518*, df=1,* p=<0.001), presence of discrimination (X^2=7.448*, df=1,* p=0.006), discussing testing of HIV and counseling (X^2=4.123*, df=1,* p=0.04), duration lived with a partner (X^2=19.374*, df=1,* p=<0.001). However, disclosure of HIV status and the use of community HIV index testing services(X^2=0.18*, df=1,* p=0.672) didn't reveal a significant association with Community HIV Index Testing

The logistic regression was then used to model significant family-related factor variables. From this research; Study respondents who reported experiencing stigma were 8.3 times less likely to use community HIV index testing amenities as likened to their colleagues while Study respondents who reported experiencing discrimination were 2.5 times less likely to exploit community HIV index testing services as equated to their colleagues.
These findings were in harmony with the qualitative data where one of the key informants noted that
"*One of the factors leading to poor utilization of community HIV index testing services is discrimination. You find family members who are living with HIV tend to be segregated in the society and actually this is a factor leading to poor adherence to HIV treatment, I feel a lot needs to be done to curb such problems in the society*…."

Study respondents who reported discussing HIV and testing and counseling services with healthcare providers were 3.3 times more likely to utilize community HIV index testing services as equated to their colleagues.

These findings were in agreement with the qualitative data where one of the key informants noted that "*Presence of HIV and testing and counseling among members since it makes them aware of the benefits of being tested for HIV also helps to bring out fear linked with HIV testing. Furthermore, this counseling service gives hope to the affected family members…*"

Furthermore, study respondents who reported living with their partners for less than five years were 5.89 times less likely to use community HIV index testing services as likened to their fellow counterparts who had lived with their partners for more than five years.

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Table 4:Bivariate and Multivariate logistic regression on Family-related Factors Associated with Community HIV Index Testing

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Independent Variables	Categories	Statistical Significance (Chi-Square Test)	Logistic regression OR,95%CI	Logistic regression P-value

Social support	Yes No	X^2=6.529 df=1 p=0.01	.45(.19-1.07)	0.07
Stigma	Yes No	X^2=47.518 df=1 p=<0.001	8.3(0.6-.24) ref	0.00
Discrimination	Yes No	X^2=7.448 df=1 p=0.006	2.5(.19-.91) ref	0.03
Disclosure status	Yes No	X^2=0.18 df=1 p=0.672	-	-
Discussion about HTC	Yes No	X^2=4.123 df=1 p=0.04	3.3(.11-.84) ref	0.02
Duration lived with a partner	< 5yrs >5yrs	X^2=19.374 df=1 p=<0.001	5.8(2.52-13.79) ref	0.00

4. Discussion

From this study, t~~T~~he utilization of community HIV index testing services was low in this study with only 24.2 % of the study respondents reporting utilizing these health services. These results were comparable to an investigation done in Lesotho which reported almost a similar proportion of community HIV index

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testing(25.1%)[7]. However, another two studies carried out in Nigeria and Ethiopia reported higher proportions of community HIV index testing standing at 48.1% and 49% respectively[8], [9]The probable reasons for differences in the proportion of community HIV index testing could be attributed to the difference in the sampling procedures, sample size estimation, and the difference in the study region. In this study, study respondents aged 18-29 years were 2.7 times more likely to utilize community HIV index testing as likened to HIV index clients aged 50-59 years. The probable reason for this could be linked to increased awareness for better seeking of appropriate protective health services among youths as compared to adults who tend to assume matters related to their health. These study findings were in agreement with two other studies conducted in India and Kenya[10], [11], However, another study done in Tanzania was contrary to these findings[12].

Study respondents who had a secondary education level were 6.1 less likely to utilize community HIV index testing services as compared to those who had a tertiary education level. A higher education level tends to increase the level of awareness on matters related to protective HIV testing services hence the increased odds of the utilization of these services among the most learned HIV index patients. These verdicts were in covenant with two other studies conducted in Kenya and Tanzania[6], [13]. From the multivariate analysis, married couples were 1.8 times more likely to utilize community HIV index testing services as compared to divorced couples. The probable reason for this could be linked to married couples being more expected to motivate one another to pursue community HIV index testing services as compared to divorced couples. These research findings were consistent with two other studies done in Rwanda and Uganda [14], [15] However this was contrary to a study another investigation done in Ethiopia[16].

Lack of trust by HIV index clients in ART clinic staff was found to reduce the odds of using community HIV index testing amenities by 2. HIV-related issues are considered sensitive matters that need to be observed with the utmost privacy. Lack of privacy when handling sensitive information has been considered to be a blitch of privacy. These research findings were consistent with two other studies done in Nigeria and Mozambique[17], [18]. Study respondents who reported being counseled to bring families for HIV testing were 1.9 times more expected to utilize community HIV index testing as linked to their colleagues. Counseling services instill confidence and knowledge on the need to seek HIV testing services which have been found to offer a protective value and better well-being among HIV index patients. These findings were consistent with another study done in Mozambique[19]. However, two other studies done in Somalia and South Sudan were not in agreement with these findings[20], [21].

Study respondents who reported experiencing stigma were 8.3 times less likely to use community HIV index testing amenities as likened to their colleagues. These findings were consistent with two other studies done in Botswana[1], [22]. Nevertheless, another study conducted in Gambia was contrary to these findings [23]. Study respondents who reported experiencing discrimination were 2.5 times less likely to exploit community HIV index testing services as equated to their colleagues. Discrimination remains to be a harmful act that ditters the effective utilization of essential health services. These verdicts were in harmony with another investigation carried out in Mali[24].

5. Conclusion

The utilization of community HIV index testing services was low in this study with only 24.2 % of the study respondents reporting utilizing these health services. In the social demographic aspects linked with community HIV index testing, the status of marriage, gender, age, and education level was found to increase the odds of utilizing community HIV index testing. In the health facility factor, lack of trust among health care providers reduced the odds of utilizing community HIV index testing while counseling to bring family members for HIV testing increased the odds of utilizing community HIV index testing services. Finally, in the family-related factors for community HIV index testing, the presence of stigma and discrimination, and duration lived with a partner reduced the odds of utilizing community HIV index testing while discussing HIV testing and counseling services increased the odds of using community HIV index testing amenities.

9. Ethical Considerations

Principally, the researcher ensured that approval was received from MKU and the relevant county health departments in Yirol West County to allow for the commencement of data collection Further, the researcher maintained participation in the study was charitable, hence the respondents would be free to decline to participate. For those respondents who chose to be involved in the study, the researcher would also inform them of their discretion to withdraw whenever they felt uncomfortable. Voluntary participation in the study ensured that the investigator did not intimidate partakers in the provision of information and confidentiality and anonymity would be observed throughout the entire process. Respondents who participated in the study were allowed to execute their independence as much as possible. This included the right to privacy and secrecy.

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Abbreviations

AIDS; Acquired Immunodeficiency Syndromes, HIV; Human Immunodeficiency Virus, NACOSTI; National Commission for Science Technology and Innovation, PLHIV; People Living with HIV, SPSS; Statistical package for social sciences.