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ORIGINAL PAPER

Factors Associated with Utilisation of Couple HIV Counselling and Testing Among HIV-Positive Adults in Kyoga Fishing Community Uganda, May 2017: Cross Sectional Study

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Abstract

Couple HIV counseling and testing (CHCT) is key in preventing heterosexual HIV transmission and achievement of 90-90-90 UNAIDS treatment targets by 2020. We conducted secondary data analysis to assess utilization of CHCT and associated factors using logistic regression. 58/134 participants (49%) had ever utilized CHCT**.** Disclosure of individual HIV results to a partner [aOR = 16; 95% CI: (3.6–67)], residence for > 1 < 5 years [aOR = 0.04; 95% CI (0.005–0.33)], and none mobility [aOR = 3.6; 95% CI (1.1–12)] were significantly associated with CHCT. Age modified relationship between CHCT and disclosure (Likelihood-ratio test LR chi2 = 4.2 (p value = 0.041). Disclosure of individual HIV results with a partner and residence for more than 1 year improved utilization of CHCT; mobility reduced the odds of CHCT. Interventions should target prior discussion of individual HIV results among couples and mobile populations to increase CHCT.

Keywords Couple · HIV counseling & testing · Fishing community

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Abbreviations

ADS	Associate Director for Science
ANC	Antenatal care
aOR	Adjusted odds ratio
CHCT	Couple HIV Counseling and Testing
CI	Confidence interval
COR	Crude odds ratio
PMTCT	Prevention of Mother-To-Child Transmission of HIV
SD	Standard Deviation, HIV/AIDS: Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

Introduction

HIV prevention and treatment efforts have led to a 16% global decline in new HIV infections among adults, from 2.1 million [1.6 million–2.7 million] to 1.7 million [1.4 million–2.3 million] in 2018. The UNAIDS set treatment targets (90 90 90) by 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy. Despite these successes, the pace is too slow to reach UNAIDS 90-90-90 targets by 2020. Sub-Saharan Africa contributed 47% of new infections, ranking highest regional proportion of new infections among adults between 2010 and 2018 [1]. Multinational studies demonstrated that 60–94% of HIV transmission occurred among married couples or cohabiting relationships [2]. Couple HIV Counseling and Testing (CHCT) is a key intervention in prevention of heterosexual HIV transmission [3]. Couple HIV Counseling and Testing (CHCT) is HIV counseling, testing, and receipt of results, taken together by two people who are in or are planning to be in a sexual relationship.

According the HIV sero-survey among HIV-infected persons in Uganda 84% of unprotected sexual encounters were with a spouse, increasing the risk of HIV transmission [4]. Furthermore, a qualitative study among sero-discordant couples in Uganda highlighted individual myths about sero-discordance, such as HIV infection not being detected by test kits, HIV infection being hidden in the blood, belief that gentle sex protects against HIV, and belief in immunity, which may influence risky behavior and increase the risk of HIV transmission [5]. These myths about serodiscordance may negatively impact couple HIV testing and counseling. According to the HIV behavioural survey report, Kyoga fishing community, a community in Uganda centered around fishing sites and the fishing industry, has an HIV prevalence of 14%. Married and cohabiting individuals had a higher prevalence (16%) than individuals who were never in a union (2.7%). Targeting discordant couples with interventions such as CHCT can avert 36–60% of heterosexual HIV transmissions that would have occurred without any intervention [2]. CHCT facilitates identification of infections and improves uptake of HIV services and timely linkage to and retention in HIV care [3, 6] CHCT has been associated with improved use of anti-retroviral medicines, reduced risk of HIV transmission, and better child survival [7, 8]. While benefits of CHCT are documented, several studies have found that many couples in high-prevalence HIV settings are not aware of their own or their partner's HIV status, leaving sero-discordant couples at risk for transmission [9, 9–11]. In Uganda, CHCT is provided at antenatal care (ANC) clinics in Prevention of Mother-To-Child Transmission (PMTCT) programs or through voluntary CHCT in HIV clinics. Previous studies in Uganda found low levels of uptake of CHCT, ranging from 5 to 34% among pregnant women [12, 13]. Lack of CHCT utilization has been associated with fear of abandonment, fear of violence from a partner, the fear of disclosure of HIV status to a partner, lack of time to test together, long waiting times at the facility, and long distance to testing facility [13, 14]. These studies were done at ANC clinics among pregnant women and the general population. However, factors affecting uptake of CHCT among the fisher folks (persons living in fishing communities) have not been established. HIV testing is widely available in Uganda at stand-alone voluntary counseling and testing (VCT) clinics, health centers and hospitals however there is no emphasis of couple HIV counseling and testing among fisher folks. In this study, we assessed the level of CHCT and factors affecting uptake among HIV-infected adults in Kyoga fishing community.

Methods

Study Design and Setting

We conducted a cross-sectional study utilising secondary data from persons living with HIV who were interviewed as part of an HIV behavioural survey. The survey was conducted among individuals aged 15–59 years in the Lake Kyoga fishing community. In the survey 40 landing sites in eight districts surrounding Lake Kyoga were selected during August-November 2013.

Sampling

The primary sampling unit for the HIV behavioural survey were the landing sites sampled using probability proportionate to size based on whether they were fish handling or

not. Households were the secondary sampling unit and all eligible household members were included in the survey. We analysed data for persons who had tested positive for HIV infection at the most recent test before the survey.

Study Population

The population studied included all married or cohabiting persons aged 15–59 years who had resided in the Lake Kyoga fishing community for at least 3 months.

Measure of Variables

The dependent variable was couple HIV counseling and testing (CHCT) which is HIV counseling, testing, and receipt of results, taken together by two people who are in or are planning to be in a sexual relationship. It was measured as a binary outcome at the analysis unit of an individual reporting utilization of CHCT. Demographic characteristics, including age, sex, educational level, marital status, health region of residence, and length of stay on landing site were studied for their association with CHCT. We also evaluated knowledge about HIV transmission, employment status, disclosure of individual HIV results to partner, type of union, and recent travel or sleeping away from the landing site.

Data Management and Statistical Analysis

We analysed data using STATA12.0. Using logistic regression, we identified independent variables that were associated with CHCT. Variables with a p value < 0.2 at the bivariate level were considered for inclusion in the multivariate model. The model was built using backward stepwise regression. We assessed for interaction among different variables using the log likelihood ratio test before adding them to the final model. Factors with p value less than 0.05 were independently associated with CHCT after controlling for confounding.

Results

Characteristics of Participants in This Analysis

The Lake Kyoga fishing community HIV behavioural survey included 1,810 participants with 98% household response rate. Our analysis included 134 (7.3%) survey respondents. Table 1 shows socio-demographic characteristics of the 134

Table 1 Social demographic characteristics of study participants

Variable	Category	(n = 134)	Percentage (%)
Age group	15–35	55	79
	36–45	45	21
Mean Age	38 (Standard Deviation = 8.7)		
Sex	Male	63	47
	Female	71	53
Marital status	Married	76	57
	Cohabiting	17	13
	Divorced/widowed/separated	37	28
	Never married	4	3
Education level	Primary	105	78
	Secondary and higher	20	14
	None	09	08
Tribe	Atesot	36	31
	Langi/Acholi	44	37
	Others soga,ganda	38	32
Type of Union	Intend to marry	34	29
	Polygamous	21	18
	Monogamous	63	53
Region of residence	Soroti	25	29
	Central	30	25
	Buyende	12	10
	Lira	51	43
Distance to Health facility	< 5kilometres	77	65
	> 5kilometres	41	35

Soroti region (Serere, Kaberamaido), Central region (Nakasogola, Kayunga), Lira (Apac,Dokolo Amlatar)

Table 2 Factors associated with CHCT among HIV Positive adults in Kyoga fishing community, Uganda

Factor	CHCT		COR 95% CI	P value
	Yes n(%)	No n(%)		
Sex				
Female	26(44)	37(61)	0.50(0.24–1.1)	0.09
Male	32(56)	24(39)	Ref	1
Age group				
36–59	33 (57)	40 (66)	0.69 (0.33–1.5)	0.33
15–35	25 (43)	21 (34)	Ref	1
Marital status				
Cohabiting	9(16)	5(8)	1.5 (0.46–5.0)	
Divorced/widowed/separated	10(18)	24(39)	0.35 (0.14–0.84)*	
Married	38(67)	32(53)	Ref	1
Length of stay at island				
≥5 year	43 (74)	40(65)	0.54(0.15–1.9)	0.34
> 1 < 5 years	7 (12)	17(28)	0.21 (0.046–0.91)	0.037
< 1 years	8 (13)	4 (7)	Ref	1
Travelled away from landing site in last 12 months				
Yes	31(54)	37(61)	1.3 (0.65–2.8)	0.43
No	27(46)	24(39)	Ref	1
Region of residence of residence				
Buyende	6(10)	6(9.8)	4.0 (0.8–17)	0.07
Lira	30(52)	22(36)	5.4 (1.7–16)**	0.003
Central	17 (29)	13 (21)	5.2 (1.5–17)**	0.008
Soroti	5(9)	20(33)	Ref	1
Distance to HF				
> 5 km	18 (44)	23(56)	0.76 (0.36–1.6)	0.44
< 5 km	39(51)	38(49)	Ref	1
Disclosure spouse				
Yes	47 (90)	31(60)	6.4 (2.2–19)***	0.001
No	5 (10)	21(40)	Ref	1
Interaction: CHCT Disclosure X Age (likelihood ratio test p value = 0.041)				
15–35				
Disclosure			1.6 (0.33–8.7)	0.52
36–59				
Disclosure			14 (14–73)**	0.001

COR Crude Odds Ratio, *CHCT* Couple HIV testing and Counseling, *CI* Confidence interval

*Statistically significant

married/cohabiting participants who were considered in this analysis. The mean age of participants was 38 (SD: 8.7) years; 61 (53%) were women, 98 (78%) attained primary education, and 63 (53%) were in monogamous marriages.

Factors Associated with CHCT Among HIV Positive Individuals in Lake Kyoga Fishing Community, Bivariate Analysis

The uptake of CHCT was 58 (48%) among persons living with HIV in the Lake Kyoga fishing community and included in this analysis**.** The odds of CHCT were 0.8 less than those who stayed at the landing site for less than 1 year [COR = 0.21; 95% CI (0,046–0.91)]. Disclosure of individual HIV results with a partner was significantly associated with CHCT [COR = 6.4; 95% CI (2.2–19)]; the odds of CHCT were five times higher in residents of both Kampala [COR = 5.2; 95% CI (1.5–17)] and Lira health regions [COR = 5.4; 95% CI (1.7–16)] compared to residents of Soroti health region. Other factors such as gender, disclosure to health worker, place of care, and distance to nearest health facility were not associated with CHCT (Table 2). We

tested for interaction and found age was an effect modifier for the relationship between couple HIV testing and counseling and disclosure Table 2 showed the effect modification was statistically significant p value = 0.04 of likelyhood ratio test (LR test).

LR chi2 = 4.2 (p value = 0.041).

Factors Independently Associated with CHCT Among HIV-Infected Adults in Kyoga Fishing Community

In multivariate analysis as shown in Table 3, previous disclosure of individual HIV results to a partner [aOR = 6; 95% CI: (2.2–19)], living at the landing site for > 1 < 5 years [aOR = 0.05; 95% CI (0.007–0.46)], and travelling and not sleeping at landing site (mobility) [aOR = 0.31; 95% CI: (0.10–0.93)] were significantly associated with CHCT. The odds of CHTC were eight times higher among residents of Lira [aOR = 8.4; 95% CI: (2.0–35)] and nine times higher among those from central region [aOR = 9.3; 95% CI: (2.0–44)] compared to residents of Soroti region. Sex confounded the effect of disclosure on couple HIV testing and counseling.

Table 3 Factors independently associated with CHCT among HIV Positive adults in Kyoga fishing community, Uganda

Factor	CHCT		aOR 95% CI	P value
	Yes n(%)	No n(%)		
Length of stay at island				
> 5 years	43(74)	40(65)	0.62 (0.1–3.60)	0.60
> 1 < 5 years	7(12)	17(28)	0.05 (0.007–0.46)**	0.007
< 1 year	8(13)	4(7)	Ref	1
Travelled away from island				
Yes	31(54)	37(61)	0.31 (0.10–0.93)*	0.039
No	26(46)	24(39)	Ref	1
Region of residence				
Buyende	6 (10)	6(9.0)	4.8 (0.69–34)	0.11
Lira	30(52)	22(36)	8.4 (2.0–35)**	0.003
Central	17 (29)	13 (21)	9.3 (2.0–44)*	0.005
Soroti	5 (9.0)	20 (33)	Ref	1
Disclosure spouse				
Yes	47 (90)	31(60)	6.4 (2.2–19)**	< 0.001
No	5 (10)	21(40)	Ref	1

Lira: Apac, Dokolo, Amulata; Central: Nakasongola, Kayunga; Soroti: Dokolo, Serere district

aOR Adjusted Odds Ratio, *CHCT* Couple HIV testing and Counseling, *CI* Confidence interval,

*Statistically significant

Discussion

Approximately half of residents living with HIV in this survey had received CHCT. The main determinants of CHCT were previous disclosure of individual HIV results to partner, not travelling away from the landing site, and longer residence at the landing sites. Our study found higher levels of CHCT than most studies in East Africa, which have found CHCT uptake of 17%, 34% and 35%among pregnant women [13, 15, 16]. These differences in the utilization of CHCT could be explained by variations in study settings.

In our study, CHCT was associated with disclosure of individual HIV status to a partner. This result is consistent with other studies done in Uganda [11, 12]. In Uganda, persons in committed relationships—particularly men—often test first for HIV individually, and then, if negative, may suggest to their spouses that they test together. There is a fear of negative consequences if one partner receives positive results before the other partner [14]. Disclosure of individual HIV status to partners may encourage partners to seek CHCT services in order to know their own status. In this study we found age was an effect modifier for the relationship between couple HIV testing and counseling and disclosure. This could be because older participants have acquired better communication skills with their partners. In addition the older individuals could have more stable relationships compared to younger ones thus less fear of negative consequences. Our findings are not consistent with an study where age had affect CHCT in Rakai [17].

Our study found that mobility was significantly associated with CHCT. The mobile population was less likely to have couple HIV counseling and testing, possibly due to having extramarital partners. A study in Kenya reported that mobile populations, especially women, were more likely to have extramarital partners away from the landing site compared to the non-mobile population [18]. This creates fear of testing for HIV as a couple because it may lead to negative consequences in their marriages if one tests HIV-positive and partner is negative. We also found that living in the landing site for more than five years was significantly associated with CHCT. This could be explained by the fact that people who have stayed at the landing site for more than five years are in stable relationships. Stable relationships may help build trust with each other and gain confidence to test together. Our findings should be interpreted with the following limitations. This was secondary data analysis which had some missing information, reducing the overall sample size. The study was cross-sectional in design, which made it impossible to assess the direction of the temporal relationship between couple HIV counseling and testing and discussion of individual HIV results. Based on this we cannot conclude on causal

relationship between couple HIV Counseling and Testing and independent factors. The strength of this study is that data were collected from all HIV-positive individuals. Findings are generalizable to the general population in discordant couples whose HIV-positive partner live in a similar setting.

Conclusions

Disclosure of HIV results to a partner and living on the landing site for five or more years increased the chances of having CHCT. Sleeping away from the landing site during the past month reduced the chances of having CHCT. Age modified effect of discussion of individual result on CHCT. We recommend interventions that encourage discussion of HIV results between partners, even when only one partner has been tested. Emphasis should be placed on individuals who have stayed for shorter periods of time and mobile populations to improve uptake of CHCT. Ministry of Health should emphasize community based HIV testing strategy in concentrating on the younger age group who were less likely to test together as a couple.

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Author Contributions LN had primary responsibility for final content. SK contributed to data collection, compilation, conception of the manuscript idea and rigorous review of the manuscript; JK, RM, IM assisted in compilation and conception of the manuscript idea and its write up; JK, DK, AAR contributed to the manuscript write up and rigorous review. PN, CK, BM, LB, RW contributed to the interpretation of results, writing of the manuscript, and reviewed the paper for substantial intellectual content. All co-authors participated in writing, reading and approved the final manuscript.

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Data Availability The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Compliance with ethical standards

Conflict of interest We declare that we have no conflict of interest as far as this study is concerned.

Disclaimer The views expressed in this article are those of the authors and do not necessarily represent the official position of the US Centres for Disease Control and Prevention (CDC) and Makerere University School of Public Health (MakSPH).

Ethical Approval The HIV behavioral survey obtained ethical approval from the Higher Degrees Research and Ethics Committee of Makerere University School of Public Health and was registered by Uganda National Council for Science and Technology. Permission to use the survey data was obtained from Makerere University School of Public Health where the survey is housed and the Uganda Centers for Disease Control and Prevention (CDC). Participants provided written informed consent to participate in this study and were informed of study benefits and risks before agreeing to participate. Participants were free to withdraw from the study without losing the benefits arising from the study. Individual data were coded with numeric identifiers instead of participant names to ensure confidentiality.

Informed Consent This study is published with approval from Makerere University School of Public Health.

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