Harla Journals

Harla Journal of Health and Medical Science

Journal home page: https://journals.ddu.edu.et/index.php/HJHMS

Harla journal of Health and Medical Science

Original Research

Index case partner and family HIV testing and associated factors at public health facilities in Dire Dawa City Administration, Eastern Ethiopia

Wondwossen Taye Debela[1*], Adugna Endale[1]

[1]Department of Public Health, College of Medicine & Health Sciences, Dire Dawa University, P.O.Box: 1362, Dire Dawa, Ethiopia

Abstract

Background: HIV/AIDS continue to kill people and cause morbidity around the world. In Ethiopia an estimated a significant number of people with HIV infection remain undiagnosed, despite the massive increase of HIV testing services (HTS). Everyone who has been exposed to HIV by the index case will be offered an HIV test as part of index testing. This study was aimed to assess the proportion and associated factors of partner and family-based HIV testing among patient on ART at Public health facilities in Dire Dawa city, Ethiopia.

Method: Facility based cross sectional study design using quantitative data collection was conducted from May, 1- 30, 2023. A total of 389 study people living on ART were selected using systematic random sampling techniques using unique ART number. Structured questionnaire was used for the data collection. The questionnaire was developed on Kobo tool-box platform. The data was exported to and analyzed using SPSS version 27.

Result: A total of 389 index cases were participated in this study with a response rate of 99.2%. The mean age (±SD) was 34.57 (±6.82) years. Among the respondents' partner and children, 323 and 183 respectively were elicited for HIV testing. Out of the 323 elicited partners, 197(60.1%) were tested, whereas out of the 183 elicited children 183(100%) were tested for HIV. Concerning the sex sharing of index cases who were tested their partner most of them 222(57.1%) were female. About 325 (83.5 %) have disclosed their HIV status. The overall prevalence of index case partner and family HIV testing acceptance was 48.5% (95% CI: 43.3, 53.7). In the multivariable analysis: marital status (AOR= 0.02; 95% CI: 0.01, 0.06), education level (AOR= 34.73;95% CI: 2.65, 45.36), substance usage (AOR= 2.71; 95% CI:1.30,5.63), duration with current partner (AOR= 0.25; 95% CI: 0.06, 0.96), and disclosure of' sero-status to partners (AOR=32.42; 95% CI: 3.85, 72.94) were significantly associated with index case partner and family HIV testing.

Conclusion: This study showed that higher proportion of index cases partners were received ICT and significantly associated with educational level, duration stayed with partner, sero-status disclosure and length stayed on ART. Strengthening index cases' awareness, ART adherence, and facilitating HIV status disclosure are crucial for effective partner and family-based HIV testing services.

Keywords: Partner, family, Index Case Test, HIV/AIDS, Ethiopia

**Corresponding author: Wondwossen Taye Debela, debelaw2009@gmail.com, +251942241675*

DOI:

Received March 2023; Received in revised form May 2023; Accepted June 2023

1. Introduction

1.1. Background

The World Health Organization defines index testing as a focused HIV testing approach in which the partners and biological children of people diagnosed with HIV are offered HIV testing services [1]. Nearly 38 million people worldwide are living with HIV/AIDS, and more than 16% of those do not know their status, making the human immune deficiency virus (HIV) a significant global public health risk [2]. Despite the availability of ART, Acquired Immune Deficiency Syndrome and the human immunodeficiency virus (HIV) continue to kill individuals and cause morbidity over the world. HIV/AIDS is a major public health concern in Sub-Saharan Africa [3].

Sub-Saharan Africa is home to over 45% of newly infected HIV patients [4]. Worldwide, 30% (one in five) of PLHIV are still unaware they are infected with HIV, despite the need of HIV testing services for HIV prevention, treatment, and support [5]. The HIV epidemic in Ethiopia is classified as mixed, with significant regional variations and urban concentrations, including certain identifiable hotspot areas driven by important and priority Populations. According to the EDHS conducted in 2016, the overall HIV prevalence for adults (15–49) is 0.96%; the prevalence in urban areas was 2.9%, which is seven times greater than that in rural areas (0.4%) and just 79% of PLHIV are aware of their HIV status [6]. The percentage of people with HIV who are aware of their HIV status increased significantly in low- and middle-income African nations over the previous decade, rising from 10% in 2005 to 50% in 2015. 40% of HIV-positive individuals are still undiagnosed [7].

According to the 2018 spectrum, ART coverage for adults (age > 15) has reached 75%, however only 34% of children living with HIV are currently covered. An index case discovery method to find family members with unknown HIV status is family testing [8]. Family testing is an index case finding strategy to identify family members with unknown HIV status. Index case HIV testing strategy uses a known HIV-infected person receiving HIV care as an index reference to target partners for HIV testing [9]. A crucial public health initiative called the partner and family-based index case testing program connects sexual partners, children, and siblings of infected people to testing and treatment [6]. Among the high-risk groups for contracting HIV/AIDS are partners and families of those living with the HIV virus. [2]. HTS should be made available to qualified customers who are at a high risk of contracting HIV. High-risk people who are still undiagnosed need to be tested and connected as soon as possible to treatment and care services [10]. Finding children with HIV who have been overlooked by

standard testing procedures is a major concern. and Over 95% of HIV infections in children aged 0 to 14 are transmitted by vertical transmission [11].

The method of identifying and informing sexual partners of PLHIV (Index cases) so they can receive HTS and sign up for care is known as strategic index case testing [12]. The goal of getting 90% of all HIV-positive individuals on ART is to be reached, and the World Health Organization (WHO) recommends offering an index case testing partner and family strategy to link at least 95% of HIV positive individuals to ART. However, a significant portion of index clients do not know who their partners are or may be contacted, and less than 95% of partners who test positive for HIV often begin antiretroviral therapy (ART) soon after the index test [13]. Partner testing services for people diagnosed with HIV have not been routinely offered or implemented, therefore, uptake and coverage remain low [14].

About 15% of HIV-positive people worldwide are unaware of their status as of 2021 (Global HIV/AIDS Overview). Nearly 80% of HIV-positive individuals in sub-Saharan Africa do not know their own HIV status, and more than 90% do not know the status of their partners [15]. Although its scope was not previously understood, Children with HIV make up a large portion of Ethiopia's population [16] and twenty percent of individuals are unaware of their HIV status [17]. Index case testing is a potentially high-yield detection strategy regardless of national sero-prevalence [11]. Hence this study was identified the Proportion and factors associated of partner and family base HIV testing in study area.

2. Methods and Materials

2.1. Study setting

The study was taken place in Dire Dawa City in Eastern part of Ethiopia, which is roughly 525 kilometers from Addis Ababa and 55 kilometers from Harar. Dire Dawa city has an estimated population of 492,631, of which 68% are urban and 32% are rural [33]. Dire Dawa has two public hospitals, 15 Health centers of which 7 urban and 37 health post. Its hospital is named Dilchora Referral Hospital and Sabiyan General Hospital each of them serves 1.5 and 1 million people of Dire Dawa and neighborhood regions including Djiboutian and the Urban health centers are Gore HC, Ganda Qore HC, Addis Ketema HC, Melka HC, Dechatu Health Center, Lege Hare Health Center, Number one Health Center. Dire Dawa public health facilities provide services of Outpatient including ART, ANC, AOPD, POPD, VCT, FP, delivery where specialty and admission services is delivered by Hospital like internal medicine, orthopedic,

surgery and ENT**.** The study will be conducted in Dire Dawa City Administration public Health facilities

2.2. Study Design and Data Collection

Facility based cross sectional study was conducted among people living with HIV and currently on ART in Dire Dawa city public health facilities from May1st – 30th, 2023 Eastern Ethiopia. Structured questionnaires were used to capture data relevant to the study's objective and research questions were adapted from different literatures [18]. The questionnaire was initially prepared in English and translated into the local language, Amharic then it was translated back to English to check the comprehension and consistency. Information generated through interview was entered kobo tool box and exported to SPSS version27.0 Software. The principal investigator was trained the data collectors and supervise over the data collection process for half day. Data collected uploaded daily reviewed and checked for completeness and consistency of the response.

2.3. Sample Size and Sampling Procedures

The sample size for people currently on ART and eligible for Partner and Family Based Index Case HIV Testing services is determined using single population proportion formula of initial sample size [n= (Zα/2)2 p(1-p)/d2] considering the following assumptions: At 95% confidence level (Zα/2 = 1.96), using Family based index case proportion(p=49.3%) [26], 5% marginal error between the sample (d = 0.05). The sample size was calculated to be: n= (1.96)2(0.49*0.51) / (0.05)2=384. Since the total number of populations was less than 10,000 (N = 4472) and relatively small population the sample size was n=n/(1+(n/N)) =384/ (1+384/4472) =354, non-respondent 5%= 17, hence total sample size was 371 people on ART which is proportionally take the sample.

The health facilities were taken by simple random sampling technique. The sample size for the second objective was calculated using Epi Info Stat using different associated factors included in the conceptual framework. Since the sample size for the second objective was less than that of the first objective, 371, study participants were included in the study. The sample were drawn from people living with HIV and who are currently receiving antiretroviral therapy (ART) in Dilchora referral hospital, Sabiyan general hospital, Goro Health Center (HC), Addis Ketema HC, Genda Korie HC and eligible for Partner and Family Based Index Case HIV testing service during the study period using systematic random sampling techniques from line list of unique ART number of eligible PLHIV for Partner and Family Based Index Case HIV

Testing (P&FBICT) service and which was small population size that was (N=4472). Since the total population of this study was n < 10,000.

Then 371 eligible for Partner and Family Based Index Case HIV Testing (P&FBICT) during the study period were included in order to approach study subjects during data collection period in two public Hospital and three urban health centers in Dire Dawa City based on their population proportion. The sample was drawn by systematic random sampling technique using calculated K value for each facility and determined the sampling interval of 12 in all facilities and the first sample will be selected by lottery method in each facility. People that visit ART on average monthly, Dilchora referral hospital=660, Sabiyan general hospital=440, and each health centers =330 of total=1430. Making daily sample collection were in Dilchora =6, Sabiyan = 4 and HCs =1 each.

2.4. Data Entry and Analysis

The collected data was collected by Kobo tool box mobile data collection and the data was exported to SPSS version 27 for cleaning, and analyzing. Descriptive statistics like mean, frequency and percentage were calculated as univariable analysis. To evaluate the association between a single independent variable with dependent variable multivariate logistic regression was employed and odds ratio was used to compare strength of association and those variables that had p-value of less than 0.25 was included in the multi-variable logistic regression model analysis and those variables with a p value of 0.05 was declared as significantly and independently associated with the dependent variable.

2.5. Operational Definitions

Index client: The index client is defined as the individual who is found HIV positive on HIV Testing and Counseling (HTC) provided at the health facility.

Partner and Family Based Index Case HIV Testing service: is HIV testing and counseling for partner, children of people living with HIV who are aged < 15 years, and parents of index child. Families tested: means either partner or children < 15 years of age tested for HIV [26].

Index testing: voluntary process where counselors and/or health care workers ask index clients to list all of their: sexual or injecting drug partners within the past year, and children [33].

Partner: All people who has sexual act in the past 12 months.

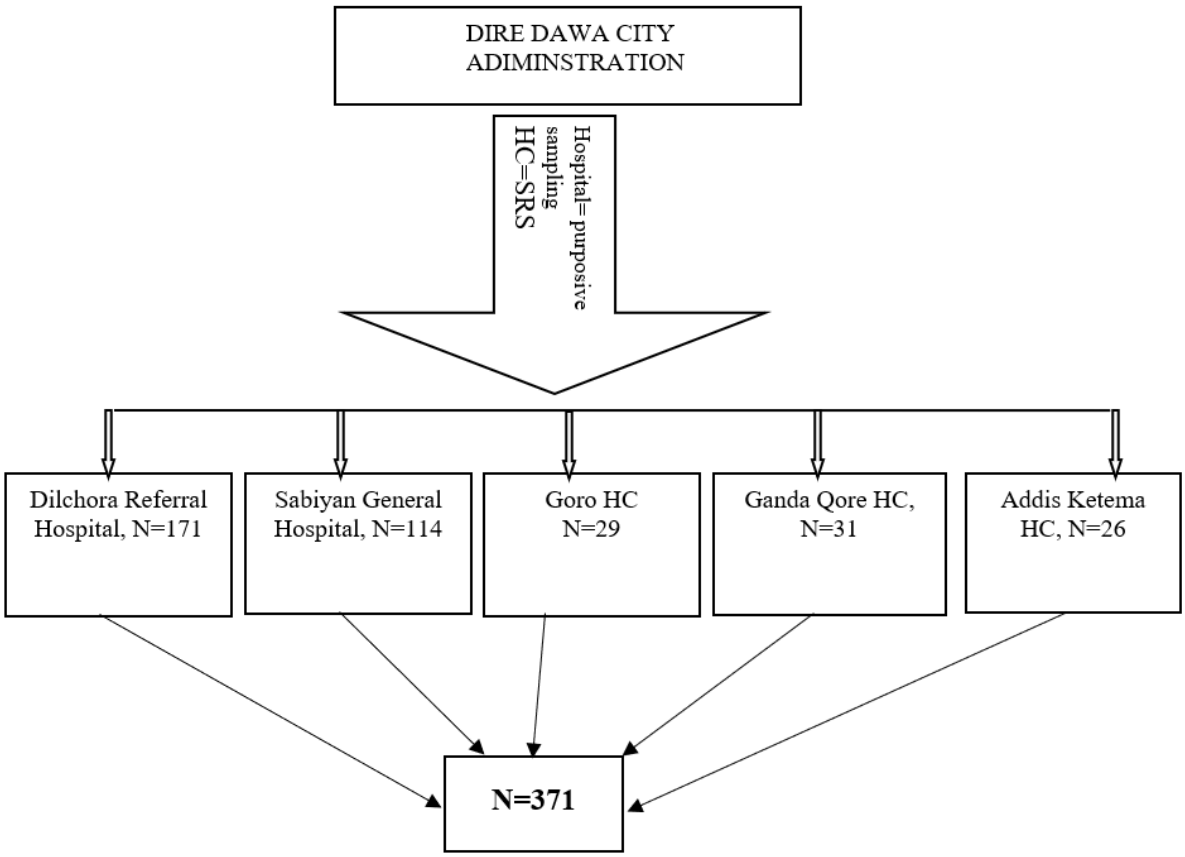

Figure 1: Diagrammatic presentation of the sampling procedure used in the study in Proportion and associated factors of Partner and Family based HIV index case testing among ART patient indie Dawa Public Hospital

3. Results

3.1. Socio-demographic and HIV /AIDS related characteristics

A total of 371 index cases were participated in this study and response rate was 98.3%. Among the total respondents, 212(57.1%) were females, of which, 102(56.70%) females were accepted Index Case HIV testing. The mean age of people living with HIV participated in this study was 34.61 (+ 6.77) and 88 (46.00%) of respondents were in the age group 30-39 years. Of those married, 151 (83.90%) had index case partner and family HIV testing. Among those with primary education, more than half 98 (54.40%) had index case HIV testing (Table-1).

Table 1: Socio-demographic characteristics of study participants in Dire Dawa 2023

Variables	Categories	Index case partner and family HIV testing		Total	X^2	P -value
		Yes	No			
		N (%)	N (%)			
Sex	male	78 (43.30)	81(42.40)	159(42.9)	0.03	0.86
	female	102(56.70)	110(57.60)	212(57.1)		
Age	< 30 years	16(8.9)	75(39.3)	91(24.5)	5.06	0.00*
	30-39 years	94 (52.20)	76(39.8)	170(45.8)		
	40- 49 years	70 (38.90)	37(19.4)	107(28.8)		
	>=50 years	0(0)	3(1.6)	3(0.8)		
	married	151 (83.90)	34 (17.80)	185(49.9)	165.5	0.00*
	Widowed	9 (5.00)	32 (16.80)	41(11.1)		

Marital status	divorced	16 (8.90)	64 (33.50)	80(21.6)		
	never married	4 (2.20)	61(31.90)	65(17.5)		
Education	unable to read	8 (4.40)	8 (4.20)	16(4.3)	19.05	0.00*
	primary	98 (54.40)	116 (60.70)	214(57.7)		
	secondary	40 (22.20)	58 (30.40)	98(26.4)		
	>=college	34 (18.90)	9 (4.70)	43(11.6)		

In this study among participant that had disclosed their sero-status to one of partner or family member,178 (57.2 %) of them had partner index case testing. Of participant preferred time of test was reported that weekend 94 (24.2%) and evening time 5(1.3%) (Table-2).

Table 2: HIV and ART related factors of index case in public health facility, Dire Dawa ,2023.

Variables	**Categories**	**Index case partner and family HIV testing**			X^2	**P- value**
		Yes	**No**	**Total**		
Duration after HIV test	<5year	15 (55.6)	12 (44.4)	27(7.3)	0.58	0.45
	>5year	165 (47.9)	179 (52.1)	344(92.7)		
Duration on ART	≤1year	13 (48.1)	14 (51.9)	27(7.3)	0.00	0.97
	>1 year	167 (48.5)	177 (51.5)	344(92.7)		
Duration with current partner?	<5years >5years I don't know	31(83.8) 125(84.5) 24(12.9)	6(16.2) 23(15.5) 162(87.1)	37(10)	189.4	0.00*
Discussed HTS with partner	Yes	170 (68.0)	80 (32.0)	148(39.9)	116.5	0.00*
	No	10 (8.3)	111 (91.7)	186(50.1)		
Disclosed sero-status with friends	No	2 (3.3)	58 (96.7)	250(67.4)	58.50	0.00*
	Yes	178 (57.2)	133 (42.8)	121(32.6)		
Have another sexual partner	No	88 (34.9)	164 (65.1)	60(16.20	58.15	0.00*
	Yes	92(77.3)	27(22.7)	311(83.8)		

The finding of this study revealed that among study participants who were had index case partner and family HIV testing, 104 (57.80%) of them were positive sero-status for HIV. (Table-3).

Table 3: characteristics of partner and family index case of HIV Testing service in Dire Dawa Public Health Facility, 2023

Variables	**Categories**	**Index case PF HIV testing**		**Total**	X^2	**P-values**
		Yes	**No**			
Partners serostatus	Negative	76 (42.20)	159 (83.20)	235(63.3)	143.8	0.00*
	Positive	104 (57.80)	32 (16.80)	136(36.7)		
Partner hurt	Yes	8(4.4)	6(3.1)	14(3,8)	0.43	0.51
	No	172(95.6)	185(96.9)	357(96.2)		
Partners' sex	Male	125 (69.4)	130(68.1)	255(68.7)	0.08	0.77
	Female	55 (30.6)	61(31.9)	116(31.3)		
Experience HIV Stigma	Yes	164(91.1)	174(91.1)	338(91.1)	0.00	0.99
	No	16(8.9)	17(8.9)	33(8.9)		

3.2. Factors associated with index case partner and family HIV testing

In the bi-variable logistic regression marital status, education level, substance usage, duration with current partner and disclosure of respondents sero- status to partners were significantly associated with index case partner HIV testing acceptance at 0.25 significance level. In the

multivariable analysis, all candidate variables, such as marital status, education level, substance usage, duration with current partner and disclosure of' sero status to partners were significantly associated with index case partner and family HIV testing. The odd of index case partner and family HIV testing among married respondents was 0.01 times less as compared to unmarried respondents [AOR=0.02, 95%CI: 0.01, 0.06].

The odd of index case partner and family HIV testing among respondents who are unable to read was 37.73 times higher than to respondents who have college and above education level [AOR=34.73, 95%CI: 2.65, 45.36], while respondents who have primary education level were 8.94 times more likely to index case partner and family HIV testing than respondents who have college and above education level [AOR=8.94, 95%CI: 2.14, 37.39]. Similarly, respondents who have secondary education level were 10.25 times more likely to index case partner and family HIV testing than respondents who have college and above education level [AOR=10.25, 95%CI: 2.21, 47.48].

Respondents who use substance were 2.71 times more likely to index case partner and family HIV testing as compared to respondents who do don't use substance [AOR=2.71, 95%CI: 1.30, 5.63]. The index case partner and family HIV testing among respondents who have less than five years duration with their current partner was 75% less likely than respondents who have five years and above duration with their current partner [AOR=0.25, 95%CI: 0.06, 0.96]. Finally, respondents who were disclosed their sero-status to their family or partner were 32.42 times more likely to index case partner and family HIV testing than respondents who did not disclose their sero-status [AOR=32.42, 95%CI: 3.85, 72.94] (Table-4).

Table 4: Associated factors of index case partner and family HIV testing among ART patient in public health facility, Dire Dawa 2023.

Variables	Categories	COR (95% CI)	AOR 95% CI)
Marital status	Married	0.02(0.02, 0.04)	0.02(0.01, 0.06) **
	Widowed	0.23 (0.07, 0.82)	0.18 (0.04, 0.78) **
	Divorced	0.26 (0.08, 0.83)	0.37(0.10, 1.38)
	Single	1	1
Educational	Unable to read	3.78 (1.11, 12.86)	34.73(2.65, 45.36) **
	Primary	4.47 (2.05, 9.78)	8.94(2.14, 37.39) **
	Secondary	5.48 (2.37, 12.66)	10.25(2.21, 47.48) **
	>=College	1	1
Discussed HTS	Yes	23.59 (11.718, 47.478)	3.25(0.86, 9.70)
	No	1	1
Used substance	Yes	2.33(1.53, 3.56) *	2.71(1.30, 5.63) **
	No	1	1
Duration with current partner	<5years	0.99(0.66, 0.39) *	0.25(0.06, 0.96) **
	>=5years	1	1
Disclosed sero-status	Yes	38.81 (9.31, 161.76) *	32.42(3.85, 72.94) **
	No	1	1

4. Discussion

This study sought to assess the index case-based partner and family HIV testing and its associated factors among index cases on ART in Dire Dawa Public health facilities. This study showed that the overall index case partner and family HIV testing was 48.5% (95% CI: 43.3, 53.7). This finding is higher than study finding in Nigeria 30% [7] and Sodo Town south west Ethiopia 31.5% [22] south west Ethiopia 37.2% [26]. whereas, it was similar to study report from Kule refuge campy 49.3% [25]. It was lower than the research findings from OSSA care and support 64%, Zewditu Memorial hospital 73% Felege Hiwot Hospital 74.2% [34][5], West Ethiopia 85.2% [32] and Woliso Town 96.5% [24].

The disparity may be attributed to factors such as geographic location, information attainment, facility service level like referral hospital provides surplus services and some facility may provide incentive for workers like OSSA. In this study, about half married 185 (49.9%) respondents had index case testing acceptance which is lower than report finding from Kule Refuge campy 56.9% [26] and JUSH 86.5% [35]. This difference might be due to study setting at where this study was carried out on outpatient setting of general hospital and health centers that the patient might get limited information whereas study carried in Kule was refugee camps were might had more information in refugee setting at where worker might have incentives.

This study finding showed that among those who had index case partner and family HIV testing, 104 (57.80%) of them were positive for HIV. This finding was lower than study finding report of Felege Hiwot which was 74.2% of index case partner and family test was positive [18]. According to this study finding, among study participant, 109(29.4%) experienced HIV related mild and 31(8.3%) moderate depression symptom. This finding is lower than study finding of Dessie Referral Hospital which were 51.9% mild and 39.2% moderate depression [28] and it is higher than study finding in JUSH which were 24% was mild and 6% moderate depression. This discrepancy might be contributed to study setting at where they were referral and specialized university hospitals. According to this study finding, out of all participant 268 (72.2%) had good knowledge whereas 103(27.8%) had poor knowledge on perception of HTS and HIV transmission prevention. This finding showed that less likely good knowledge than study found in Nekemte Town 83.6% and higher than study found in Woliso town 16.5%. similarly in this study 27.8% were poor knowledge which higher than study conducted in Nekemte town 10.4% and lower than study found in Woliso Town 81.7% [25].

Multivariate analysis of the study revealed that marital status, education level, discussion on HIV testing with partner/family, substance usage, duration with current partner, disclosure of' sero status to partners were factors significantly associated with index case partner HIV test acceptance. This study revealed that those who were unable to write and read educational level had more family members who had index case partner and family HIV tested than those who had completed college. Hence the finding of this study was suggested that those with lower levels of education were more likely to index case partner and family HIV testing which is similar to study finding in Pretoria south Africa, at where respondents with better education were significantly less likely than respondent who were less educated to HIV test [20]. This finding is contradictory to research conducted in the Kule Refugee camp, where higher levels of education were associated with higher index case partner and family testing rates of HIV tests [32]. This discrepancy might be contributed to low respondent to unable to write and ready educational level 16(4.3%) and college level was 43(11.6%). and married 185(49.9%) and single status 65(17.5%). Although this conclusion calls for more research, it also indicates that prevention programs should be tailored to make the case partner and family of the index member more educated.

On the other hand, this study revealed that the odds of the index case partner and family HIV testing was lower among respondents who had married compared to those who had unmarried status. This finding showed that married marital status is significantly associated with index case partner and family HIV testing. Despite my best efforts, I was unable to discover a comparable publication; hence, this finding necessitates additional research. The finding of this study revealed that, respondents who had used substance were 2.71 (95%; CI:1.30, 5.63) times higher index case partner and family HIV testing than respondents who did not use substance. This is similar to Pretoria research finding that HIV testing was strongly associated with respondents' alcohol abuse [20]. This indicates that while these factors may put partners at high risk for HIV infection, they may also make index case partner and family HIV testing possible. More concentrated efforts should be made to provide index case partner and family HIV testing to those who report high-risk substance using behaviors and experiences.

According to this study findings, respondents who had completed secondary school had a 10.25-fold higher likelihood than those who had attended college or above of having their family members tested for HIV/AIDS (AOR=10.25: 95% CI, 2.21, 47.48). It is greater than the Kule Refugee Campy study's findings (AOR=2.6, 95% CI=1.32–4.72) [25]. The finding of this research showed that index case partner and family HIV test acceptance among respondent

who had been with current partner live for less than five years were 75% less likely to compared to those respondents that live for more than five years with current partners (AOR=0.25, 95% CI;0.06, 0.96). This study shows that index case partner and family HIV testing has a significant association with HIV status disclosure of index cases.

This study demonstrated that the odds of index case partner and family HIV testing were found to be higher among index cases who have disclosed their HIV status compared to those who have not disclosed their HIV status. This finding is higher than study done in Kule Refuge campy (AOR = 7.22 95% CI: 1.45, 35.82) [5] on disclosure of HIV status to family, which showed that partners who were aware were about 32.42 (95% CI: 3.85, 72.94) times more likely to accept HIV testing and counseling when compared to partners of the index clients who had not disclosed their status. This is finding is higher than study conducted in Kule Refugee Campy (AOD=2.1 95%CI:2.2-16.90) [5]. This discrepancy in the results could be attributed to the different study environments of the health center, hospital and the refuge campy; the former was conducted in a more comfortable setting than the latter.

5. Conclusion

This study's findings demonstrated that index case partner and family HIV testing was low. Despite the fact that index case partner and family HIV testing were substantially correlated with marital status, education level, substance use, length of time with current partner, and disclosure of sero status to partners. The cornerstone of partner and family-based index case HIV testing services must be maintained in order to combat HIV. This can be achieved by increasing index case knowledge and facilitating HIV status disclosure at health facilities with fully competent and educated healthcare personnel.

Declaration

Ethical approval

Ethical clearance was obtained from Dire Dawa University Ethical review committee and letters of permission was obtained from Dire Dawa Health Bureau. The objective of the research to be done, risk and benefit of the research and the way of securing the confidentiality of the information were explained to concerned body.

Informed consent

Informed consent was obtained from the study participant.

Recommendations

- HIV testing barriers, which are psychological, social, and economic issues, should be addressed through various approaches.
- It is recommended that other scholars should do further investigation by including qualitative data, homosexual, injectable drug users' partners.
- It is open for further study including governmental and private sectors and variables

Competing Interests

There is no conflict of interest, according to the authors.

Authors' Contributions

WT took part in every stage of the research process, from the research's conception to its initiation, data collecting, analysis, and interpretation, as well as the drafting and revision of the report. AE took part in the analysis and critical evaluation of the text. All authors read and approved the final manuscript. MT took part in data collection.

Acknowledgement

The authors would like to thank the staffs of the Dire Dawa Administration Health Bureau who worked in ART Clinic for their cooperation and who involved in the data collection process. This work was not funded.

References

1. S. Essajee, N. Putta, S. Brusamento, M. Penazzato, S. Kean, and D. Mark, "Approaching 2020: Scaling up key interventions for children and adolescents living with HIV Family-based index case testing to identify children with HIV".
2. M. Edosa, E. Merdassa, and E. Turi, "Acceptance of Index Case HIV Testing and Its Associated Factors Among HIV/AIDS Clients on ART Follow-Up in West Ethiopia: A Multi-Centered Facility-Based Cross-Sectional Study," HIV/AIDS - Res. Palliat. Care, vol. 14, pp. 451–460, 2022, doi: 10.2147/HIV.S372795.
3. M. R. Ghislain, G. A. A. Mushebenge, and N. Magula, "Cause of hospitalization and death in the antiretroviral era in Sub-Saharan Africa published 2008-2018: A systematic review," Medicine (Baltimore)., vol. 100, no. 43, p. e27342, 2021, doi: 10.1097/MD.0000000000027342.
4. UNAIDS, "FACT SHEET 2022".
5. Y. Wegu, T. Sileshi, and T. Melis, "Assessment of Index Case Family Testing Among Adults Attending Art Clinic at Kule Refugee Camp, Southwest Ethiopia: 2021," *HIV/AIDS - Res. Palliat. Care*, vol. 14, pp. 13–21, 2022, doi: 10.2147/HIV.S344100.
6. E. Federal HIV/AIS Prevention & Control, "Draft 0," no. c, p. 71472, 2021.
7. A. Onovo, A. Kalaiwo, A. Agweye, G. Emmanuel, and O. Keiser, "Diagnosis and case finding according to key partner risk populations of people living with HIV in Nigeria: A retrospective analysis of community-led index partner testing services," *eClinicalMedicine*, vol. 43, Jan. 2022, doi: 10.1016/j.eclinm.2021.101265.
8. T. Haile and H. Gulema, "Assessment of the proportion and the factors associated with partner and family based index case HIV testing in Woliso town, Oromia, Ethiopia: a cross-sectional study," pp. 1–21, 2020, doi: 10.21203/rs.3.rs-24186/v1.
9. J. J. Nutor, H. O. Duah, P. Agbadi, P. A. Duodu, and K. W. Gondwe, "Spatial analysis of factors associated with HIV infection in Malawi: Indicators for effective prevention," *BMC Public Health*, vol. 20, no. 1, pp. 1–14, 2020, doi: 10.1186/s12889-020-09278-0.
10. "National Comprehensive HIV Testing Services Training Participant Manual Federal Ministry of Health Ethiopia," 2022.

11. S. Essajee, N. Putta, S. Brusamento, M. Penazzato, S. Kean, and D. Mark, "Approaching 2020: Scaling up key interventions for children and adolescents living with HIV Family-based index case testing to identify children with HIV."
12. M. Katbi *et al.*, "Effect of clients Strategic Index Case Testing on community-based detection of HIV infections (STRICT study)," *Int. J. Infect. Dis.*, vol. 74, pp. 54–60, 2018, doi: 10.1016/j.ijid.2018.06.018.
13. D. Williams *et al.*, "HIV testing and ART initiation among partners, family members, and high-risk associates of index clients participating in the CommLink linkage case management program, Eswatini, 2016–2018," *PLoS One*, vol. 16, no. 12 December, pp. 1–15, 2021, doi: 10.1371/journal.pone.0261605.
14. "HIV SELF-TESTING AND PARTNER NOTIFICATION SUPPLEMENT TO CONSOLIDATED GUIDELINES ON HIV TESTING SERVICES," 2016.
15. R. Bunnell *et al.*, "HIV transmission risk behavior among HIV-infected adults in Uganda: results of a nationally representative survey.," *AIDS*, vol. 22, no. 5, pp. 617–624, Mar. 2008, doi: 10.1097/QAD.0b013e3282f56b53.
16. E. Pegurri *et al.*, "The missed HIV-positive children of Ethiopia," *PLoS One*, vol. 10, no. 4, pp. 1–10, 2015, doi: 10.1371/journal.pone.0124041.
17. P. Manual, "National Comprehensive HIV Testing and Counseling Training," no. January, 2018.