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Disclosure of HIV infection status is a difficult process that involves communication of information about a potentially stigmatizing and transmissible illness. Despite this it is important for preventing HIV infection and mitigating its impacts. This study aims to describe disclosure of HIV diagnosis and factors associated with it among a cohort of patients receiving antiretroviral treatment in eastern Ethiopia. A descriptive study was conducted among a random sample of patients that started antiretroviral treatment in three hospitals located in eastern Ethiopia. Unadjusted and adjusted logistic regression models were used to examine association and derive odds ratios (OR) as well as 95% confidence intervals. A total of 1540 study participants were included in the study, where 963 (62.5%) were females and 574 (37.3%) males. Most of the married participants have disclosed to their wife or husband (402, 66.3%), but the overall sample had much lower rates of disclosure to brothers or sisters (262, 17.0%), and relatives (259, 16.8%). A small number of patients (11.6%, 179) did not disclose their infection status at all and none of the patients (0, 0%) had disclosed to all of their family members. In the multivariate logistic regression analysis patients who were not married (OR 1.54; 95% CI 1.01–2.35) and illiterate (OR 1.81; 95% CI 1.03–3.20) had higher odds of nondisclosure. The findings of the study revealed a lower level of HIV disclosure status compared to similar settings. Therefore, more focus should be given to unmarried and illiterate persons during counseling sessions.

Keywords: antiretroviral; HIV/AIDS; status; infection; disclosure; treatment; ART; Ethiopia

Introduction

Disclosure of HIV infection status is a difficult and personal matter that involves communication of information to someone else about a stigmatizing and transmissible illness (Remien & Bradley, 2007). Individuals who are aware of their infection with the human immunodeficiency virus (HIV) and who engage in sexual relations have a social and legal responsibility to disclose their infection to their partners (Dicken, 1988; Gostin, 1989; Gostin & Curran, 1987). Disclosure of HIV-positive status is an important part of coping with the disease and understanding the circumstances surrounding this process is critical in preventing HIV infection and mitigating its impact (Varga, Sherman, & Jones, 2005).

Issues of HIV infection status disclosure take center stage in debates because of their intimate links to confidentiality and privacy as human-rights issues and their potential role in prevention (Pinkerton & Galletly, 2007). Disclosure is considered as a pathway to creating awareness about the HIV/AIDS pandemic and is an important crucial step toward ending stigma and discrimination against people living with HIV (UNAIDS, 2000). People living with HIV infection may conceal their HIV status to their sexual partners and other people in their lives. HIV-infected persons who are not willing to disclose their HIV status may have had adverse experiences related to previous disclosures which may lead to loss of social support and employment, violent reactions and other forms of discrimination (Simbayi et al., 2007). However, they may also simply lack the skills and emotional strength to effectively disclose their status to other people (Simbayi et al., 2007). Few studies have been reported about disclosure rates or the factors associated with disclosure of HIV infection in Ethiopia or elsewhere. So the aim of this study is to describe disclosure of HIV diagnosis and its predictors among a patients receiving antiretroviral treatment in eastern Ethiopia.

Methods

Study area and period

The study was conducted in three hospitals located in eastern Ethiopia. Data were collected from September

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to November 2010. The hospitals are serving the referral service in eastern Ethiopian population.

Study design

A descriptive study was conducted among a random sample of 1565 patients that started antiretroviral treatment between 11 September 2005 and 10 September 2008. The patients' identification numbers were used to generate the necessary sample from the records of the hospitals and for extracting data from antiretroviral treatment medical records.

Socio-demographic characteristics, other baseline clinical, and laboratory measurements and disclosure of HIV infections were abstracted from patients' cards. Disclosure was measured at enrollment through face-to-face interview with nurses and recorded in the patients' treatment card.

Sampling was conducted by first selecting the identification numbers of patients from a computer database and then randomly selecting them. Then a standard questionnaire was used for recording information extracted from the selected patients' cards. This form is developed using the standardized antiretroviral treatment (ART) entry and follow up form employed by the clinic which also includes information on HIV infection disclosure. Four advanced ART nurses who are trained on comprehensive HIV care and involved in patient follow ups collected the data. Data collection was supervised by the researchers. All completed data collection forms were examined for clarity and consistency. The data were entered and cleaned by trained data clerks and principal investigator before analysis.

Statistical analysis

Descriptive statistics such as mean, SDs, and tables were used to investigate the characteristics of the sample. Unadjusted and adjusted logistic regression models were used to examine association and derive odds ratios (OR) as well as 95% confidence intervals. A p-value of 0.05 was used. Descriptive statistics and logistic regressions were conducted using SPSS version 15.

Ethical consideration

Ethical clearance was obtained from the Institutional Research Ethics Review Committee of Haramaya University. All information collected from patients cards were kept strictly confidential.

Result

Baseline characteristics of the study participants

A total of 1540 (98.4%) study participants were included, where 963 (62.5%) were female and 574 (37.3%) males, respectively. Twenty-five (1.6%) observations were dropped as they did not have sufficient information concerning disclosure. The median (inter-quartile range, IQR) age of the sample was 32 (28–40). The education levels of the participants was no education (261, 17.0%), primary education (681, 44.3%), secondary school (500, 32.5%), and tertiary education (96, 6.2%; Table 1).

Table 1. Baseline characteristics of HIV-infected patients initiating antiretroviral therapy in eastern Ethiopia.

	All patients, N[a] (%)
Sex	
Male	574 (37.3)
Female	963 (62.5)
Age (median, IQR)	32 (28–40)
Religion	
Muslim	305 (19.8)
Orthodox	1074 (69.9)
Protestant	144 (9.4)
Others	14 (0.9)
Education	
No education	261 (17.0)
Primary	681 (44.3)
Secondary	500 (32.5)
Tertiary	96 (6.2)
Marital status	
Never married	287 (18.6)
Married	606 (39.4)
Separated	288 (18.7)
Divorced	116 (7.5)
Widowed	242 (15.7)
Occupation	
Merchant	75 (7.4)
Gov. employee	157 (15.5)
Nongovernment employee	41 (4.1)
Day laborer	174 (17.2)
Job-less	402 (39.7)
Other	163 (16.2)
Past co-trimoxazole treatment	
Yes	758 (49.2)
No	782 (50.8)
WHO stage at baseline	
Stage I	92 (6.0)
Stage II	348 (22.7)
Stage III	890 (58.2)
Stage IV	200 (13.1)
Baseline CD4 count, median (IQR)	135 (76.0–198.3)
Weight at baseline in kgs, median (IQR)	50.0 (44.0–56.0)

IQR, inter-quartile rage.
[a]Number and percentages unless indicated otherwise.

Patterns of HIV status disclosure

Most of the participants have disclosed to their wife or husband (402, 66.3%), brothers or sisters (262, 17.0%), and their relatives (259, 16.8%). Both males (188, 32.8%) and females (214, 22.2%) disclosed more to their marriage partner. In both females (104, 10.8%) and males (26, 4.5%) disclosure to children was the lowest. Overall, 11.6% (179) of the patients did not disclose their infection status at all and none of them (0, 0%) have disclosed to all of the categories mentioned above (details provided in Table 2).

Predictors of nondisclosure of HIV infection

We conducted both bivariate and multivariate logistic regression analyses to examine predictors of nondisclosure of HIV infection. In bivariate analysis singlehood (1.61; 95% CI 1.15–2.27) and lack of education (OR 1.85; 95% CI 1.20–2.84) were associated with nondisclosure. In the multivariate logistic regression with disclosure or nondisclosure entered as the dichotomous dependant variable and predictors such as age and sex entered simultaneously, both singlehood and lack of education were independent predictors of nondisclosure. Those who were not married (OR 1.54; 95% CI 1.01–2.35) and do not have education (OR 1.81; 95% CI 1.03–3.20) had higher odds of nondisclosure. Neither clinical nor immunological factors such as weight loss nor WHO stage among other variables were predictors for HIV serostatus disclosure (Table 3).

Discussion

This study aimed to examine HIV serostatus disclosure patterns to sexual partners, family members, and friends and its correlate among individuals who are receiving antiretroviral treatment in eastern Ethiopia. The study identified that 11.6% of participants did not disclose their status to nobody. The independent predictors of nondisclosure of infection status were found to be being illiterate and unmarried.

The disclosure rate in our study (88.4% to someone and 66.3% for their partner) is lower than other studies findings. In southern Ethiopia, 85.7% the women had disclosed their HIV-positive status to their sexual partners (Gari, Habte, & Markos, 2010). However, it is higher than that reported from Addis Ababa (60.5%; Tadios & Davey, 2006). Findings from other sub-Saharan countries have also reported higher disclosure rate to sexual partners, e.g., Uganda (97%; Nakayiwa, 2006), South Africa (90%; Nachega & Lehman, 2005), and Zimbabwe (78%; Patel et al., 2012). This might be due to the fact that this study has measured disclosure at enrollment to treatment; however, disclosures after enrollment could be higher because of reasons such as counseling.

In this study, married couples are more likely to disclose their infection to anyone compared to unmarried persons. Similar finding have been found in other studies (Akani & Erhabor, 2006; Deribe, Woldemichael, Wondafrash, Haile, & Amberbir, 2008; Gari et al., 2010; King et al., 2008; Patel et al., 2012). This could be attributed to the social bond which ties these relationships compared to the others. In our study it was reported majority of disclosure were to spouses. Disclosures of HIV positivity may also be more likely in longer duration relationships due to the likelihood of higher levels of intimacy and greater opportunity for information exchange (Duru et al., 2006). These findings indicate

Table 2. Disclosure of sero-status among the cohort of HIV-infected patients on ART in eastern Ethiopia.

Disclosure to	Parents, *n* (%)[a]	Brothers or sisters, *n* (%)	Relatives, *n* (%)	Wife or husband, *n* (%)[b]	Own children, *n* (%)	No one knows, *n* (%)
Yes	194 (12.6)	262 (17.0)	259 (16.8)	402 (66.3)	130 (10.4)	179 (11.6)
No	1346 (87.4)	1278 (83.0)	1281 (83.2)	204 (33.7)	1125 (89.6)	1361 (88.4)
Total	1540	1540	1540	606	1255	1540
Disclosure in males						
Yes	66 (11.5)	87 (15.2)	101 (17.6)	188 (32.8)	26 (4.5)	62 (10.8)
No	508 (88.5)	487 (84.8)	473 (82.4)	386 (67.2)	548 (85.5)	512 (89.2)
Total	574	574	574	574	574	574
Disclosure in females						
Yes	128 (13.3)	174 (18.1)	158 (16.4)	214 (22.2)	104 (10.8)	116 (12.0)
No	835 (86.7)	789 (81.9)	805 (83.6)	749 (77.8)	859 (89.2)	847 (88.0)
Total	963	963	963	963	963	963

[a]Results are based on valid responses to each of the rows and column variables. Percentages calculated based on columns.
[b]For male and female rows, wife and husband, respectively are applicable for married repondents only.

Table 3. Predictors of non-disclosure of infection among HIV/AIDS patients on antiretroviral treatment in eastern Ethiopia.

Independent variables	Unadjusted OR, 95% CI	*p*-value	Adjusted OR, 95% CI	*p*-value
Age	1.01 (0.99–1.02)	0.585	1.01 (0.99–1.03)	0.320
Sex				
Female	1.00		1.00	
Male	0.88 (0.64–1.23)	0.461	0.96 (0.62–1.50)	0.863
Marital status				
Married	1.0		1.00	
Not married	1.61 (1.15–2.27)	0.06	1.54 (1.01–2.35)	0.046
Employment				
Employed	1.00		1.00	
Not employed	0.83 (0.56–1.24)	0.369	0.74 (0.49–1.13)	0.161
Religion				
Christian	1.00		1.0	
Muslim	1.24 (0.85–1.79)	0.269	1.29 (0.80–2.08)	0.292
Education				
Secondary and above	1.00		1.00	
Primary education	1.30 (0.91–1.87)	0.151	1.29 (0.82–2.02)	0.278
No education	1.85 (1.20–2.84)	0.005	1.81 (1.03–3.20)	0.040

that more focus and support should be given to unmarried persons during counseling session by antiretroviral treatment counselors.

We found that illiterate individuals were more likely to not disclose their serostatus. Similar finding have been documented in other studies (Akani & Erhabor, 2006; Bouillon et al., 2007; Duru et al., 2006; Santamaria et al., 2011; Shacham, Small, Onen, Stamm, & Overton, 2012). Educated individuals have a level of independence and access to health services and media, hence informed about the importance of disclosure. In addition studies have documented that illiterate individuals have stigmatizing attitude toward HIV (Amuri, Mitchell, Cockcroft, & Andersson, 2011; Cao et al., 2010) which might hinder disclosure.

One of the limitations of this study is the potential for social desirability bias due to the fact that disclosure was recorded using face-to-face interviews with nurses which may lead to over reporting of disclosure rates. We do not have information on whether disclosure took place intentionally or unintentionally since our study is based on secondary data. It is also obvious that disclosure rates for patients on ART do not represent the general population of HIV infection patients.

In conclusion, our findings revealed a lower level HIV status disclosure compared to similar setting. Being illiterate and being unmarried were the factors associated with nondisclosure of HIV infection status. Therefore, more focus on education and counseling should be given to these groups during counseling sessions by health care workers. Further research needs to be conducted to examine the longitudinal pattern of disclosure among HIV-infected patients that start antiretroviral treatment.

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