



# HHS Public Access

Author manuscript

*AIDS Care*. Author manuscript; available in PMC 2022 September 01.

Published in final edited form as:

*AIDS Care*. 2021 September ; 33(9): 1133–1138. doi:10.1080/09540121.2020.1785999.

## DISCLOSURE OF HIV STATUS AMONG PATIENTS NEW TO HIV CARE IN SOUTHERN ETHIOPIA: ROLE OF PERCEIVED SOCIAL SUPPORT AND OTHER FACTORS

Alan R. Lifson<sup>1</sup>, Sale Workneh<sup>2</sup>, Abera Hailemichael<sup>2</sup>, Richard F. MacLehose<sup>1</sup>, Keith J. Horvath<sup>3</sup>, Rose Hilk<sup>1</sup>, Anne Sites<sup>4</sup>, Tibebe Shenie<sup>2</sup>

<sup>1</sup>University of Minnesota, Division of Epidemiology and Community Health, Minneapolis, USA

<sup>2</sup>National Alliance of State and Territorial AIDS Directors, Ethiopian Office, Addis Ababa, Ethiopia

<sup>3</sup>San Diego State University, Department of Psychology, San Diego, CA

<sup>4</sup>National Alliance of State and Territorial AIDS Directors, Global Program, Washington DC, USA

### Abstract

Reports from Sub-Saharan Africa, with a large HIV-infected population, vary widely in how often HIV status is disclosed to others, including spouses and other partners. We surveyed 1,799 Ethiopian HIV patients newly enrolled in care within the previous 3 months at one of 32 local hospitals and health centers about disclosure of HIV status and two perceived social support domains: emotional/informational (EI) and tangible assistance (TA) support. Disclosure to another person was reported by 1,389 (77%) persons. Disclosure rates to specific persons were: spouses or other partners=74%; mothers=24%; fathers=16%; children=26%; other family members=37%; friends=19%, and neighbors/other community members=13%. Disclosure to another person was associated with higher social support scores on both EI and TA domains, marriage, and a longer time knowing HIV status. In multivariate adjusted models, disclosure to any person, as well as disclosure specifically to a spouse or partner, were associated with higher EI and higher TA social support scores. Provision of knowledgeable and emotionally supportive assistance can be an important factor in facilitating HIV disclosure. Helping persons with HIV decide who to disclose to and how to do so in the most positive is an essential component of HIV care and support.

### Keywords

HIV disclosure; social support; sub-Saharan Africa; Ethiopia

---

Corresponding Author and Requests for Reprints: Alan Lifson, MD, MPH, Division of Epidemiology and Community Health, University of Minnesota, 1300 S. Second Street, Suite 300, Minneapolis, MN 55454-1015, Phone: 612-626-9697 FAX: 612-624-0315, lifso001@umn.edu.

DISCLOSURE

No potential conflict of interest has been reported by any of the authors.

## INTRODUCTION

For persons living with HIV (PLHIV), the decision to share their HIV status with others can have many positive outcomes, but may also be associated with concerns about negative reactions (Bott & Obermeyer, 2013; Deribe et al., 2010; Dessalegn et al., 2019; Dessie et al., 2019; Gadisa et al., 2017; Gari, Habte & Markos, 2010; Kiene, Dove & Wanyenza, 2018; King et al, 2008; van Lettow et al., 2019; Wong et al., 2009). Disclosure to sexual partners or others can have benefits including adopting measures to prevent HIV transmission, psychological and emotional support, reduced feelings of depression, and positive impacts on treatment adherence and other health outcomes. However, PLHIV may be concerned about potential negative consequences of disclosure, including social rejection, isolation and physical violence.

Reports from Sub-Saharan Africa (SSA), with the greatest numbers of PLHIV, vary widely in how often HIV status is disclosed to others, including sexual partners. In one systematic review of pregnant and post-partum women in SSA, disclosure rates to any person ranged from 5.0%-97%, and to husbands or partners from 30%-93% (pooled estimate=64%) (Tam, Amzel, & Phleps, 2015). In another systematic review of Ethiopian PLHIV, disclosure rates to sexual partners varied from 42%-93% (pooled estimate=73%) (Mekonnen, Lakew, Muchie, & Teshome, 2019). Other recent studies from Ethiopia and elsewhere in SSA also reported diverse HIV status disclosure rates to sexual partners and others (Abdool Karim et al., 2015; Damian et al., 2019; Dessalegn et al., 2019; Gadisa et al., 2017; Molemans et al., 2019; van Lettow et al., 2019).

Given the potential benefits of disclosing HIV status and variable rates reported in SSA, it is important to identify factors associated with disclosure in this population. In this analysis, we report the rate of disclosure to different persons among 1,799 Ethiopian PLHIV newly entering care within the previous three months, and the association of disclosure with demographic characteristics, perceived social support, and other psychosocial factors. We first report on disclosure to any other person, and then (given potential risks of sexual transmission) specifically focus on disclosure to spouses or other partners.

## METHODS

Participants were recruited for a randomized trial of community support workers for newly diagnosed PLHIV (Lifson et al., 2018; Lifson et al., 2019). We hypothesized that social support from such workers would improve retention in HIV care and other health outcomes. Patients were enrolled from HIV clinics at 32 local hospitals or health centers in Ethiopia's Southern Nations, Nationalities, and Peoples' Region, which has a large rural population. Inclusion criteria included age ≥ 18 years, and new enrollment in HIV care at participating clinics within the previous 3 months.

### Measurements:

Baseline health surveys, verbally administered in Amharic by trained staff, included two multi-part questions assessing disclosure: "Have you told the following people you are HIV-positive?" (asked individually about disclosure to mothers, fathers, and spouses/primary

partners), and “How many of the following people have you told that you are HIV-positive?” (asked individually about disclosure to children, other relatives, friends, neighbors, and community members).

Perceived social support was assessed using two domains from the Medical Outcome Study Social Support Survey (MOS-SSS): emotional/informational (EI) support (8 items assessing emotional support and guidance/advice), and tangible assistance (TA) support (4 items assessing material aid or assistance) (Sherbourne & Stewart, 1991). For analysis, EI, TA and total scores were categorized into three levels: the lowest quartile, two middle quartiles, and highest quartile, allowing for comparison of groups with higher and lower support levels. Other survey items included: demographics; month and year participant first learned their HIV-positive status; presence of six physical symptoms lasting > 1 month; ability to carry out normal activities (e.g., work, family care); knowledge about HIV treatment (8 agree/disagree questions); and the 10-item Centre for Epidemiologic Studies Depression Scale (CES-D-10) (Andresen, Malmgren, Carter, & Patrick, 1994). CD4+ count and WHO HIV clinical stage were abstracted from medical records.

### **Analysis:**

Crude associations between factors of interest and disclosure are presented using relative risks (RR) with 95% confidence intervals (CI). We used multivariable logistic regression to estimate associations between perceived social support and disclosure; estimates were used to compute marginal adjusted relative risks (Muller & MacLehose, 2014; Norton, Miller, & Kleinman, 2013). Regression models were fit for each combination of dependent and independent variables. All models were adjusted for gender, marital status, age, HIV knowledge, depression, and time between diagnosis and baseline survey. Data were analyzed in Stata V15.1 (StataCorp, 2017).

### **Ethics:**

All participants provided signed informed consent after verbal explanation of consent provisions. Ethiopia’s Ministry of Science and Technology National Research Ethics Committee and the University of Minnesota Institutional Review Board approved this study.

## **RESULTS**

From October 2015 through April 2017, 1,799 PLHIV enrolled, representing 92% of eligible patients (Lifson et al, 2018); characteristics are shown in Table 1. The mean age was 32.8 years, mean CD4+ count was 322 cells/mm<sup>3</sup>, and median time participants knew their HIV status was one month. For the 12 items from the MOS-SSS (possible scores=12-60), the median score was 35 (interquartile range [IQR] =20,48). For the EI domain (possible scores=8-40), median score was 22 (IQR=11,32). For the TA domain (possible scores=4-20), median was 12 (IQR=8,16). Higher scores for each domain reflect greater social support.

Of all participants, 1,389 (77%) reported disclosing their HIV status to another person. Of 966 participants married or with a primary partner, 74% reported disclosing to this person. When asked about immediate family members, and excluding those who said this question

was “not applicable” (e.g., because a parent was not living), 24% of 1113 persons reported disclosing to mothers and 16% of 785 to fathers. Twenty-six percent of 1114 persons reported disclosing to a child, and 37% of 1759 to another relative/family member (e.g., sibling, aunt, uncle, grandparent). Of all 1799 participants, 19% reported disclosing their status to a friend, and 13% to a neighbor or others community member.

In univariate analysis, those who reported disclosing HIV status to another persons were significantly more likely to have higher social support scores on both EI and TA domains, to be married vs. single, and to have known their HIV status >12 months (Table 1). In multivariate adjusted models, reported disclosure remained more likely among those with higher EI and TA perceived social support scores (Table 2).

#### **Disclosure to spouse or sexual partner:**

Of 966 persons with a spouse or other primary partner, those who chose to disclose to this person were again more likely to have higher social support scores on both EI and TA domains and to know their HIV status for >12 months (Table 3). In multivariate adjusted models, disclosure was also more likely among those with higher EI and higher TA social support scores (Table 2).

## **DISCUSSION**

Among 1,799 Ethiopian PLHIV newly entering care within a three month period, 77% reported disclosing HIV status to another person, most commonly to spouses or partners. Disclosure was more common among those with high social support scores on EI and TA domains, those knowing their HIV status for longer time periods, and those who were married.

Social support can be provided by multiple sources, including spouses, other family, and friends. In our analysis, social support was positively associated with reported HIV disclosure. We cannot tell whether social support preceded or resulted from disclosure, but both relationships likely exist. Since disclosure may be a stressful event (French et al., 2015; Odiachi et al., 2018), perceived social support could help “buffer” individuals against this anticipated stress (Cohen & Wills, 1985; Thoits, 1986). Disclosure may in turn lead to more positive social support from family and friends (Bott & Obermeyer, 2013; Dessalegn et al., 2019; Gadisa et al., 2017; Wong et al., 2009).

Similar to other studies, we found disclosure rates were higher among those knowing their HIV status for longer time periods (Gadisa et al., 2017; Gari et al., 2010; King et al., 2008; Wong et al., 2009). Receiving an HIV diagnosis can be distressing and require major adaptive changes (Workowski & Bolan, 2015). More time allows individuals to better accept their HIV status, additional opportunities for counselling, and more time to prepare for the processes of disclosure.

Study limitations include lack of temporality on the relationship between social support and disclosure. Since behaviors were self-reported, we could not verify whether reported disclosures actually occurred. Associations may be due to other unmeasured confounders;

however, the positive relationship between disclosure and social support is consistent with other studies. We achieved high participation rates from this specific target sample, but results may differ for other clinical, demographic or geographic populations.

It is concerning that even among those knowing their HIV status for three months or longer, some persons have not disclosed, even to their spouses or partners. Provision of knowledgeable and emotionally supportive assistance and counselling can be an important factor in facilitating HIV disclosure. As an essential component of HIV care, providers in HIV clinics, support groups, and community organizations can play a valuable role in helping PLHIV decide who to disclose to and how to do so in the most positive manner.

## ACKNOWLEDGEMENT

Funding was provided by the National Institute of Mental Health, NIH grant 5R01MH105290. Ethiopian study coordinators were Anteneh Mengistu, Behailu Dagne, Engidaw Ayele, Hiwot Tekle, Simret Girma, Signe Tefera, Tesfaye Gemechu, Tsedey Ayele, Tewabe Tamiru, and Yayush Tesfaye. We thank Lindsey Fabian and Madelyn Tillemans from the University of Minnesota; Lucy Slater from the National Alliance of State and Territorial AIDS Directors Global Program; and the Southern Nations, Nationalities, and Peoples' Region Regional Health Bureau. We especially thank all people living with HIV for their generous participation in this study.

## REFERENCES

- Abdool Karim Q, Dellar RC, Bearnot B, Werner L, Frohlich JA, Kharsany AB, & Abdool Karim SS (2015). HIV-positive status disclosure in patients in care in rural South Africa: Implications for scaling up treatment and prevention interventions. *AIDS Behav*, 19(2), 322–329. [PubMed: 25677128]
- Andresen EM, Malmgren JA, Carter WB, & Patrick DL (1994). Screening for depression in well older adults: evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale). *Am J Prev Med*, 10(2), 77–84. [PubMed: 8037935]
- Bott S, & Obermeyer CM (2013). The social and gender context of HIV disclosure in sub-Saharan Africa: A review of policies and practices. *SAHARA J*, 10 (Suppl 1), S5–16. [PubMed: 23808487]
- Cohen S & Wills TA (1985). Stress, social support and the buffering hypothesis. *Psychol Bull*, 98(2), 310–357. [PubMed: 3901065]
- Damian DJ, Ngahatilwa D, Fadhili H, Mkiza JG, Mahande MJ, Ngocho JS, & Msuya SE (2019). Factors associated with HIV status disclosure to partners and its outcomes among HIV-positive women attending Care and Treatment Clinics at Kilimanjaro region, Tanzania. *PLoS ONE*, 14(3), e0211921. [PubMed: 30865633]
- Deribe K, Woldemichael K, Njau BJ, Yakob B, Biadgilign S, & Amberbir A (2010). Gender differences regarding barriers and motivators of HIV status disclosure among HIV-positive service users. *J Soc Aspects HIV/AIDS*, 7(1), 30–39.
- Dessalegn NG, Hailemichael RG, Shewa-amare A, Sawleshwarkar S, Lodebo B, Amberbir A & Hillman RJ (2019) HIV Disclosure: HIV-positive status disclosure to sexual partners among individuals receiving HIV care in Addis Ababa, Ethiopia. *PLoS ONE*, 14(2), e0211967. [PubMed: 30768642]
- Dessie G, Wagnew F, Mulugeta H, Amare D, Jara D, Leshargie CT, ... Burrowes S (2019). The effect of disclosure on adherence to antiretroviral therapy among adults living with HIV in Ethiopia: a systematic review and meta-analysis. *BMC Infect Dis*, 19(1), 528. [PubMed: 31208346]
- French H, Greeff MWatson MJ & Doak CM (2015). HIV stigma and disclosure experiences of people living with HIV in an urban and a rural setting. *AIDS Care*, 27(8), 1042–1046. [PubMed: 25790237]
- Gadisa T, Tymejczyk O, Kulkarni SG, Hoffman S, Lahuerta M, Remien RH, ... Melaku Z (2017). Disclosure history among persons initiating antiretroviral treatment at six HIV clinics in Oromia, Ethiopia, 2012–2013. *AIDS Behav*, 21(1), 70–81. [PubMed: 26781869]

- Gari T, Habte D, & Markos E (2010) HIV positive status disclosure among women attending ART clinic at Hawassa University Referral Hospital, South Ethiopia. *East Afr J Public Health*, 7(1), 89–93.
- Kiene SM, Dove M, & Wanyenze RK (2018). Depressive symptoms, disclosure, HIV-related stigma, and coping following HIV testing among outpatients in Uganda: a daily process analysis. *AIDS Behav*, 22(5), 1639–1651. [PubMed: 29081046]
- King R, Katuntu D, Lifshay J, Packer L, Batamwita R, Nakayiwa S, ... Bunnell R (2008). Processes and outcomes of HIV serostatus disclosure to sexual partners among people living with HIV in Uganda. *AIDS Behav*, 12(2), 232–43. [PubMed: 17828450]
- Lifson AR, Workneh S, Hailemichael A, MacLehose RF, Horvath KJ, Hilk R, ... Shenie T (2018). A multi-site community randomized trial of community health workers to provide counseling and support for patients newly entering HIV care in rural Ethiopia: study design and baseline implementation. *HIV Clin Trials*, 19(3), 112–119. [PubMed: 29688139]
- Mekonnen FA, Lakew AM, Muchie KF, & Teshome DF (2019). Sero-positive HIV result disclosure to sexual partner in Ethiopia: a systematic review and meta-analysis. *BMC Public Health*, 19(1), 1743. [PubMed: 31881867]
- Molemans M, Vernooij E, Dlamini N, Shabalala FS, Khan S, van Leth F, ..., Reis R (2019). Changes in disclosure, adherence and healthcare interactions after the introduction of immediate ART initiation: an analysis of patient experiences in Swaziland. *Trop Med Int Health*, 24(5), 563–570. [PubMed: 30739385]
- Muller CJ & MacLehose RF (2014) Estimating predicted probabilities from logistic regression: different methods correspond to different target populations. *Int J Epidemiol*, 43(3), 962–970. [PubMed: 24603316]
- Norton EC, Miller MM & Kleinman LC (2013). Computing adjusted risk ratios and risk differences in Stata. *Stata J*, 13(3), 492–509.
- Odiachi A, Ereka S, Cornelius LJ, Isah C, Ramadhani HO, Rapoport L, & Sam-Agudu NA (2018). HIV status disclosure to male partners among rural Nigerian women along the prevention of mother-to-child transmission of HIV cascade: a mixed methods study. *Reprod Health*, 15, 36. [PubMed: 29499704]
- Sherbourne CD, & Stewart AL (1991). The MOS social support survey. *Soc Sci Med*, 32(6), 705–714. [PubMed: 2035047]
- StataCorp. (2017). *Stata Statistical Software: Release 15*. College Station, TX: StataCorp LLC.
- Tam M, Amzel A, & Phelps BR (2015). Disclosure of HIV serostatus among pregnant and postpartum women in sub-Saharan Africa: a systematic review. *AIDS Care*, 27(4), 436–450. [PubMed: 25636060]
- Thoits PA (1986) Social support as coping assistance. *J Consult Clin Psychol*, 54(4), 416–423. [PubMed: 3745593]
- van Lettow M, Cataldo F, Landes M, Kasende F, Nkhoma P, van Oosterhout JJ, ..., Tippett Barr BA (2019). Impact of inter-partner HIV disclosure patterns in Malawi's PMTCT program: a mixed-method study. *PLoS ONE*, 14(7), e0219967. [PubMed: 31348782]
- Wong LH, Rooyen HV, Modiba P, Richter L, Gray G, McIntyre JA, ... Coates T (2009). Test and tell: correlates and consequences of testing and disclosure of HIV status in South Africa (HPTN 043 Project Accept). *J Acquir Immune Defic Syndr*, 50(2), 215–222. [PubMed: 19131885]
- Workowski KA, & Bolan GA; Centers for Disease Control and Prevention (2015). Sexually transmitted diseases treatment guidelines. *MMWR Recomm Rep*, 64(RR-03), 1–137.

**Table 1:**

Number and Proportion of HIV Patients Who Disclosed Their HIV Status to One of More Persons, Among Those Newly Enrolling in Care at HIV Clinics in Southern Ethiopia, 2015 to 2017: Relative Risk by Selected Characteristics or Responses (N=1,799)

	<b>Did Not Disclose (N=410)</b>	<b>Disclosed (N=1389)</b>	<b>Relative Risk (95% CI)</b>
<b>Gender</b>			
Male (N=733)	184 (25%)	549 (75%)	Referent
Female (N=1066)	226 (21%)	840 (79%)	1.05 (1.00-1.11)
<b>Age (years):</b>			
25 (N=435)	101(23%)	334 (77%)	Referent
26-44 (N=1108)	268 (24%)	840 (76%)	0.99 (0.93-1.05)
45 (N=221)	38 (17%)	183 (83%)	1.08 (1.00-1.17)
<b>Marital status:</b>			
Single (N=274)	85 (31%)	189 (69%)	Referent
Married (N=888)	124 (14%)	764 (86%)	1.25 (1.15-1.36)
Widow, divorced, separated (N=632)	199 (31%)	433 (69%)	0.99 (0.90-1.09)
<b>Education:</b>			
No School (N=471)	105 (22%)	366 (78%)	Referent
Some Primary School (N=852)	196 (23%)	656 (77%)	0.99 (0.93-1.05)
Above Primary School (N=475)	109 (23%)	366 (77%)	0.99 (0.93-1.06)
<b>Total social support score on MOS-SSS EI and TA domains combined</b>			
Lowest (12-20) (N=473)	196 (41%)	277 (59%)	Referent
Middle (21-47) (N=840)	164 (20%)	676 (80%)	1.37 (1.26-1.49)
Highest (48-60) (N=479)	50 (10%)	429 (90%)	1.53 (1.41 – 1.66)
<b>Total score on MOS-SSS EI support domain</b>			
Lowest (8-11) (N=494)	184 (40%)	274 (60%)	Referent
Middle (12-31) (N=778)	176 (21%)	659 (79%)	1.32 (1.21 – 1.43)
Highest (32-40) (N=521)	50 (10%)	450 (90%)	1.50 (1.39 – 1.63)
<b>Total score on MOS-SSS TA support domain</b>			
Lowest (4-7) (N=417)	174 (42%)	243 (58%)	Referent
Middle (8-16) (N=965)	189 (20%)	776 (80%)	1.38 (1.26 – 1.51)
Highest (17-20) (N=415)	47 (11%)	368 (89%)	1.52 (1.39 – 1.66)
<b>Responses to HIV knowledge questions</b>			
<6 correct responses (N=709)	176 (25%)	533 (75%)	Referent
6-8 correct responses (N=1090)	234 (21%)	856 (79%)	1.04 (0.99 – 1.10)
<b>Chronic disease symptoms</b>			
1-6 symptoms (N=1511)	347 (23%)	1164 (77%)	Referent
None (N=288)	63 (22%)	225 (78%)	1.01 (0.95 – 1.08)
<b>WHO clinical stage</b>			
Stage I or II (N=1058)	252 (24%)	806 (76%)	Referent
Stage III or IV (N=723)	157 (22%)	566 (78%)	1.03 (0.98 – 1.08)

	<b>Did Not Disclose (N=410)</b>	<b>Disclosed (N=1389)</b>	<b>Relative Risk (95% CI)</b>
<b>CD4+ (cells/mm<sup>3</sup>)</b>			
200 (N=867)	199 (23%)	668 (77%)	Referent
<200 (N=554)	107 (19%)	447 (81%)	1.05 (0.99 – 1.11)
<b>Able to carry out activities of daily living</b>			
Unable to carry out (N=282)	57 (20%)	225 (80%)	Referent
Able to carry out (N=1513)	352 (23%)	1161 (77%)	0.96 (0.90 – 1.03)
<b>Significant depression (CES-D-10 score &gt;10)</b>			
No (N=807)	176 (22%)	631 (78%)	Referent
Yes (N=991)	234 (24%)	757 (76%)	0.98 (0.93 – 1.03)
<b>Length of time since first learned HIV status</b>			
0-2 months (N=1157)	296 (26%)	861 (74%)	Referent
3-12 months (N=313)	64 (20%)	249 (80%)	1.07 (1.00-1.14)
>12 months (N=285)	43 (15%)	242 (85%)	1.14 (1.08-1.21)

Abbreviations: RR=Relative Risk, CI= Confidence intervals, MOS-SSS= Medical Outcome Study Social Support Survey, EI=emotional/informational support, TA=Tangible assistance support, CESD-10= Centre for Epidemiologic Studies Depression Scale (10 item)



**Table 2:**

Multivariate Analysis<sup>\*</sup>: RR of Disclosure of HIV Status to Any Person (A) and to Spouses and Other Partners (B) by Scores on the MOS-SSS EI and TA Social Support Domains, Among Those Newly Enrolling in Care at HIV Clinics in Southern Ethiopia, 2015 to 2017.

<b>(A) Disclosure of HIV Status to Any Other Person (N=1,799)</b>	<b>RR (95% CI)</b>
Total score on MOS-SSS EI support domain	
Lowest quartile (8-11) (N=494)	Referent
Middle two quartiles (12-31) (N=778)	1.31 (95% CI: 1.20-1.42)
Highest quartile (32-40) (N=521)	1.48 (95% CI: 1.36-1.61)
Total score on MOS-SSS TA support domain	
Lowest quartile (4-7) (N=417)	Referent
Middle two quartiles (8-16) (N=965)	1.33 (95% CI: 1.22-1.45)
Highest quartile (17-20) (N=415)	1.45 (95% CI: 1.33-1.59)
<b>(B) Disclosure of HIV Status to Spouse or Other Partner (N=966)</b>	
Total score on MOS-SSS EI support domain	
Lowest quartile (8-11) (N=235)	Referent
Middle two quartiles (12-31) (N=436)	1.17 (95% CI: 1.03-1.31)
Highest quartile (32-40) (N=304)	1.22 (95% CI: 1.08-1.38)
Total score on MOS-SSS TA support domain	
Lowest quartile (4-7) (N=166)	Referent
Middle two quartiles (8-16) (N=549)	1.29 (95% CI: 1.12-1.48)
Highest quartile (17-20) (N=250)	1.27 (95% CI: 1.10-1.48)

\* Models are adjusted for gender, marital status, age, knowledge, depression and time between HIV diagnosis and survey date

**Table 3:**

Number and Proportion of HIV Patients Who Disclosed Their HIV Status to a Spouse or Other Partner, Among Those Newly Enrolling in Care at HIV Clinics in Southern Ethiopia, 2015 to 2017: Relative Risk by Selected Characteristics or Responses (N=966)

	<b>Did Not Disclose (N=252)</b>	<b>Disclosed (N=714)</b>	<b>Relative Risk (95% CI)</b>
<b>Gender</b>			
Male (N=485)	133 (27%)	352 (73%)	Referent
Female (N=481)	119 (25%)	362 (75%)	1.04 (0.96 – 1.12)
<b>Age (years):</b>			
25 (N=181)	52 (29%)	129 (71%)	Referent
26-44 (N=635)	159 (25%)	476 (75%)	1.05 (0.95 – 1.17)
45 (N=130)	39 (30%)	91 (70%)	0.98 (0.85 – 1.14)
<b>Marital status:</b>			
Single (N=37)	14 (38%)	23 (62%)	Referent
Married (N=846)	178 (21%)	668 (79%)	1.27 (0.99 – 1.64)
Widow, divorced, separated (N=82)	60 (73%)	22 (27%)	0.43 (0.28 – 0.67)
<b>Education:</b>			
No School (N=239)	69 (29%)	170 (71%)	Referent
Some Primary School (N=462)	115 (25%)	347 (75%)	1.06 (0.96 – 1.16)
Above Primary School (N=265)	68 (26%)	197 (74%)	1.05 (0.94 – 1.16)
<b>Total social support score on MOS-SSS EI and TA domains combined</b>			
Lowest quartile (12-20) (N=214)	86 (40%)	128 (60%)	Referent
Middle two quartiles (21-47) (N=463)	104 (22%)	359 (78%)	1.30 (1.15 – 1.46)
Highest (48-60) (N=287)	62 (22%)	225 (78%)	1.31 (1.16 – 1.49)
<b>Total score on MOS-SSS EI support domain</b>			
Lowest (8-11) (N=235)	82 (38%)	133 (62%)	Referent
Middle (12-31) (N=436)	110 (24%)	348 (76%)	1.23 (1.09 – 1.38)
Highest (32-40) (N=304)	60 (21%)	232 (79%)	1.28 (1.14 – 1.45)
<b>Total score on MOS-SSS TA support domain</b>			
Lowest (4-7) (N=166)	71 (43%)	95 (57%)	Referent
Middle (8-16) (N=549)	124 (23%)	425 (77%)	1.35 (1.18 – 1.55)
Highest (17-20) (N=250)	57 (23%)	193 (77%)	1.35 (1.16 – 1.56)
<b>Chronic disease symptoms</b>			
1-6 symptoms (N=787)	211 (27%)	576 (73%)	Referent
None (N=179)	41 (23%)	138 (77%)	1.05 (0.96 – 1.15)
<b>WHO clinical stage</b>			
Stage I or II (N=582)	142 (24%)	440 (76%)	Referent
Stage III or IV (N=376)	108 (29%)	268 (71%)	0.94 (0.87 – 1.02)
<b>CD4+ (cells/mm<sup>3</sup>)</b>			
200 (N=483)	128 (27%)	355 (73%)	Referent
<200 (N=304)	75 (25%)	229 (75%)	1.02 (0.94 – 1.11)

	<b>Did Not Disclose (N=252)</b>	<b>Disclosed (N=714)</b>	<b>Relative Risk (95% CI)</b>
<b>Able to carry out normal activities of daily living</b>			
Unable to carry out (N=133)	33 (25%)	100 (75%)	Referent
Able to carry out (N=831)	218 (26%)	613 (74%)	0.98 (0.88-1.09)
<b>Responses to HIV knowledge questions</b>			
<6 correct responses (N=362)	97 (27%)	264 (73%)	Referent
6-8 correct responses (N=604)	155 (26%)	449 (74%)	1.02 (0.94- 1.10)
<b>Significant depression (CES-D-10 score &gt;10)</b>			
Yes (N=465)	128 (28%)	337 (72%)	Referent
No (N=501)	124 (25%)	377 (75%)	1.04 (0.96–1.12)
<b>Length of time since first learned HIV status</b>			
0–2 months (N=609)	182 (30%)	427 (70%)	Referent
3–12 months (N=168)	43 (26%)	125 (74%)	1.06 (0.96 – 1.18)
>12 months (N=167)	21 (13%)	146 (87%)	1.25 (1.15 – 1.35)

Abbreviations: RR=Relative Risk, CI= Confidence intervals, MOS-SSS= Medical Outcome Study Social Support Survey, EI=emotional/informational support, TA=Tangible assistance support, CESD-10= Centre for Epidemiologic Studies Depression Scale (10 item)