HIV disclosure patterns, predictors, and psychosocial correlates among HIV-positive women in Zimbabwe

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Abstract

Disclosure of positive HIV status in Sub-Saharan Africa has been associated with safer sexual practices and better antiretroviral therapy (ART) adherence, but associations with psychosocial function are unclear. We examined patterns and psychosocial correlates of disclosure in a Zimbabwean community. Two hundred HIV positive women at different stages of initiating ART participated in a cross-sectional study examining actual disclosures, disclosure beliefs, perceived stigma, self-esteem, depression, and quality of life. Ninety-seven percent of the women disclosed to at least one person, 78% disclosed to their current husband/partner, with an average disclosure of 4.0 persons per woman. The majority (85–98%) of disclosures occurred in a positive manner and 72–95% of the individuals reacted positively. Factors significantly correlated with HIV disclosure to partners included being married, later age at menses, longer duration of HIV since diagnosis, being on ART, being more symptomatic at baseline, ever having used condoms, and greater number of partners in the last year. In multivariate analysis, being married and age at menses predicted disclosure to partners. Positive disclosure beliefs, but not the total number of disclosures, significantly correlated with lower perceived stigma (rho=0.44 for personalized subscale and rho=0.51 for public subscale, both p<0.0001), higher self-esteem (rho=0.15, p=0.04), and fewer depressive symptoms (rho=−0.14, p=0.05). In conclusion, disclosure of positive HIV status among Zimbabwean women is common and is frequently met with positive reactions. Moreover, positive disclosure beliefs correlate significantly with psychosocial measures, including lower perceived stigma, higher self-esteem, and lower depression.

Keywords

disclosure; stigma; depression; HIV; antiretroviral therapy; Zimbabwe; Sub-Saharan Africa

Introduction

In Zimbabwe, an estimated 15.6% adults are living with HIV/AIDS (UNGASS, 2008), where disclosure patterns appear to be changing pre- and post-ART availability. Stigma and

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reluctance to disclose HIV status poses challenges to treatment. Disclosure may increase access to medical services and improve mental health, or conversely, may lead to loss of support, increased stigmatization, and worsened mental health (Comer, Henker, Kemeny, & Wyatt, 2000). Women's HIV disclosure is complicated by dynamics of female relationships to spouses, partners, and the community, and disclosures have lead to violence, abandonment, and stigma (Gielen, McDonnell, Burke, & O'Campo, 2000; Medley, Garcia-Moreno, McGill, & Maman, 2004).As ART availability increases in Sub-Saharan Africa (SSA), changes in disclosures patterns among women remain understudied.

HIV disclosure patterns pre-ART availability

Prior to ART availability in SSA, HIV disclosure occurred at low rates. In Zimbabwe disclosure remained highly stigmatized in the late 1990s and pregnant women's concerns regarding disclosure included fear of stigma and discrimination, the threat of abandonment in their marriage, and concerns about domestic violence. Women who feared abandonment were less likely to consent to prenatal testing (Martin-Herz et al., 2006).In Tanzania, only 22–40% of HIV positive pregnant women disclosed to their partners after a four year follow-up (Antelman et al., 2001).

HIV disclosure patterns with ART availability

Studies examining disclosure patterns among adults after availability of ART in SSA find that most HIV positive individuals disclosed their status to at least one person, including their current sexual partner, who tended to react positively (Akani & Erhabor, 2006; Deribe, Woldemichael, Wondafrash, Haile, & Amberbir, 2008; Makin et al., 2008; Wong et al., 2009). Moreover, among those on ART, individuals were more likely to adhere to their drug regimen if they had disclosed to close family members and friends (Bajunirwe et al., 2009; Birbeck et al., 2009; Mills et al., 2006; Sanjobo, Frich, & Fretheim, 2008; Stirratt et al., 2006).

Predictors of HIV disclosure, particularly to partners

Several studies in SSA have investigated factors associated with disclosure. Older age, higher socioeconomic status, and longer duration since diagnosis (in South African adults), being married and tertiary education (in Nigerian adults), knowing partner's status, advanced disease stage, living with partner, and discussion about HIV testing prior to seeking services (in Ethiopian adults) predicted disclosure to sexual partners (Akani & Erhabor, 2006; Deribe et al., 2008; Wong et al., 2009). Similar factors have predicted HIV disclosure among pregnant women (Antelman et al., 2001; Issiaka et al., 2001; Makin et al., 2008). The implications of partner disclosure for transmission are far-reaching because women who disclosed their HIV status to their partners were significantly more likely to report safer sexual practices (Simbayi et al., 2007; Wong et al., 2009).

Psychosocial impact of HIV disclosure

Increased HIV status disclosure can lower social stigma, which may enhance self-esteem and mental health, leading to greater quality of life (QOL). Few studies, largely conducted in the context of measures validation, have explicitly examined these relationships (Berger, Ferrans, & Lashley, 2001; Bunn, Solomon, Miller, & Forehand, 2007; Franke et al., 2008).

Therefore, research that increases our understanding of factors associated with HIV disclosure is critically needed. To that end, we examined patterns, predictors and psychosocial correlates of HIV disclosure at a Zimbabwean national ART roll-out site. We hypothesized that lower social stigma, higher self-esteem, better mental health, and higher quality of life would correlate with greater number of disclosures and positive disclosure

beliefs. Moreover, we predicted that positive disclosure beliefs would correlate with greater number of disclosures.

Methods

Participants

In 2007, 200 women at the Opportunistic Infections Clinic at the Chitungwiza Regional Hospital, a national ART roll-out site 25 km from Harare, Zimbabwe, participated in a study of health-related QOL of women at various stages of initiating ART (results published elsewhere (R. Patel et al., 2009)). The women were enrolled with convenience sampling; all women who came to clinic during the study period were informed about the study and the first eight who volunteered for the day were entered into the study. Study eligibility included age ≥ 18 years, HIV positive, on ART or on the "waiting list," and ability to provide informed consent. The Stanford University Institutional Review Board and the Medical Research Council of Zimbabwe reviewed and approved the study.

Measures

Established measures for disclosure, social stigma, self-esteem, depression, and quality of life were modified for local context (see Table 1) (Berger et al., 2001; Coates, Grinstead, Gregorich, Heilbron, & al., 2000; Kalichman, Rompa, & Cage, 2000; Nhiwatiwa, Patel, & Acuda, 1998; V. Patel, Simunyu, Gwanzura, Lewis, & Mann, 1997; V. Patel et al., 1998; Pequegnat et al., 2001; Revicki, Sorensen, & Wu, 1998; Stranix-Chibanda et al., 2005; Taylor, Dolezal, Tross, & Holmes, 2009; Wu, Revicki, Jacobson, & Malitz, 1997).

The Bauman disclosure matrix was used to record HIV disclosures (see Appendix 1). HIV disclosure was treated as a one-time event, asked by, "Does [the target person] know that you have HIV?" Ten of these targets were "predetermined," i.e. chosen by the study staff. The women could indicate that a predetermined target relationship was not applicable to her. They could also identify targets not already listed, which were then termed "spontaneous" or "other" response targets. The second question queried how the woman disclosed to the target. We interpreted the disclosure occurring in a positive manner if the woman herself disclosed or asked a third person to disclose for her, as opposed to a third person disclosing without her permission. The third question queried target reaction. We interpreted the disclosure reaction to be positive if the target offered to help, as opposed to getting angry, etc. A positive disclosure manner together with a positive disclosure reaction was termed a "positive disclosure experience."

Clinical data was obtained through medical chart review, which served as "baseline data" for CD4 T-lymphocytes and WHO clinical stage at initial clinic visit. Current CD4 counts were enumerated using Guava Easy-CD4 (Guava Technologies, Hayward, CA) or FACScount (Becton Dickinson, Mountain View, CA).

The questionnaire was translated into Shona and back-translated into English by two independent translators. The vast majority of the women, nearly 85%, indicated Shona as their mother tongue; the rest who spoke Ndebele received in-person translation of the questionnaire. Three female interviewers were selected from the community, who facilitated completion of the questionnaire which contained all the study tools. We used response cards for Likert-type scales.

Data analysis

All statistical analyses were carried out using SAS version 9.1. Chi-square (χ^2) or Fisher's Exact tests evaluated categorical variables, Wilcoxon rank sum test for ordinal variables,

and student t-test for continuous variables. All variables significant at p-value ≤0.05 in univariate analysis for disclosure to current husband/partner were added to the multivariate logistic regression model. We excluded "living with your current husband/partner" from the multivariate analysis since this variable correlated nearly 100% with "being currently married," making it a redundant variable. We calculated Spearman's correlation coefficients for comparisons.

Certain continuous variables, such as the number of household goods, were transformed into binary measures based on median cut-offs, largely for the purposes of the logistic regression. Age, education and CD4 count categories were based on clinically relevant cut-offs.

Participants who disclosed their HIV status to at least one person (n=193) and indicated the relationship of partner/husband was applicable (n=111) were further divided into two groups based on whether the participant had/had not disclosed to their current husband/partner.

Results

Participants

The median age of the women was 35 years (range 22–69 years), 70% had completed at least some secondary education, and 45% reported being unemployed. Thirty seven percent were currently married, the median number of pregnancies was three, and 47% reported ever using a condom. The median baseline and current CD4 counts were 176 and 254 cells/mm^3 respectively and 60% of the women had a history of WHO clinical stage 3 or 4 disease.

Actual HIV disclosure patterns

In our cohort, 193 women (96.5%) disclosed to at least one person, for a total of 769 persons (excluding disclosures to "most recent child's father" due to significant overlap with disclosures to "current husband/partner") for an average disclosure rate of 4.0 persons per woman. Of the disclosures (Table 2), 85–98% occurred positively and 72–95% reacted positively.

The most frequently disclosed to target based on raw frequency was sister (n=127) though among applicable targets, the most frequently disclosed to group was current husband/partner (78%; Table 2). Sixty-nine (35%) women indicated disclosures to spontaneous targets, such as neighbors (28%), support group members (12%), sister-in-laws (10%), aunties, cousins, in-laws, work mates, and church mates.

Nearly one-quarter of the women's total disclosures occurred within the nuclear family (current husband/partner or children), 43% within the immediate family (mother, father, sister, or brother), and 10% within the extended family (uncle, aunt, cousins, nieces, or in-laws). In total, 77% of the disclosures were made to family members and 16% to friends and neighbors.

Factors associated with HIV disclosure to partners

Women who disclosed to current husband/partner were more often currently married than women who did not disclose (78% vs. 17%; p<0.01; Table 3). Women who disclosed reported a higher mean age of menses as compared to women who did not disclose (14.6 years vs. 13.8 years, respectively; p=0.02).

Clinical factors that significantly differed in the group of women who disclosed to current husband/partner as compared to the women who did not were: duration of HIV diagnosis (2.20 years vs. 1.35 years), being on ART (48% vs. 21%), and being more symptomatic at baseline (mean 3.68 vs. 3.10, all respectively; all p≤0.05; Table 4).

Univariate analysis (Table 5) revealed the following significant factors of disclosure: being currently married, living with current husband/partner, age at menses, number of sexual partners in the last year, ever having used condoms, duration since HIV diagnosis, number of self-endorsed AIDS-related illnesses in the last year. Multiple logistic regression analysis (Table 5) found that of the above variables, only being currently married and age at menses were significantly associated with disclosure.

Psychosocial correlates of HIV disclosure

Positive disclosure belief scores, measured using the HIV Disclosure Beliefs scale described in Table 1, correlated with positive scores for personalized (rho=0.45) and public (rho=0.51) stigma, positive self-esteem (rho=0.15), and fewer depressive symptoms (rho=−0.14, all p≤0.05; Table 6). Positive disclosure belief scores trended positively with higher QOL measures, such as mean scores (rho=0.12, p=0.09), Physical Health Summary (rho=0.12, p=0.09), and Mental Health Summary (rho=0.07, p=0.30).

Additionally, positive disclosure beliefs correlated with greater number of disclosures (rho=0.38, p<0.01; data not shown). Of note, several inter-measure correlations existed. Positive scores on the personalized and public stigma scales correlated with positive self-esteem scores (rho=0.45 and rho=0.24 respectively, both p<0.01; data not shown). Higher self-esteem scores also correlated with fewer depressive symptoms on the CAPS and SSQ14 scales (rho=−0.33 and rho=−0.26 respectively, both p<0.01; data not shown).

Discussion

Actual HIV disclosure behavior

Overall, we found support for our hypotheses: positive disclosure beliefs were significantly associated with lower stigma, greater self-esteem, lower depressive symptoms, and better quality of life. Positive disclosure beliefs were also associated with greater number of disclosures.

Most (96.5%) of the women in our cohort disclosed their HIV positive status to at least one person. Additionally, nearly 80% of the women who reported having a current partner disclosed to that person. While Martin-Herz et al's Chitungwiza cohort of pregnant women in the late 1990s differs somewhat from our present cohort of HIV positive women, a significant shift in disclosure beliefs has evidently occurred in this community; women previously refused prenatal testing out of fears of abandonment, while more recently the vast majority of the women disclosed their HIV positive status.

The above disclosure rates are higher than recent reports from South Africa (58%) and Tanzania (64%) (Maman et al., 2003; Medley et al., 2004; Simbayi et al., 2007) and may be explained by the following reasons. The high seroprevalence rate (~20%) in our study community may have reduced the stigma associated with HIV disclosure (Mahomva et al., 2006). Alternatively, the recent availability of ART may have led to greater expectations for health and survival and therefore, greater willingness to disclose. Also, the harsh socio-economic climate of Zimbabwe may have compelled these women to disclose their status to enlist support. Consistent with this hypothesis, a study among HIV positive Nigerian positive women found that expectations for emotional, social, economic, and spiritual support were the primary motives for disclosure (Akani & Erhabor, 2006). Higher disclosure rates may have resulted from successful community-wide educational interventions that promote disclosure. For instance, the testing and counseling sessions in the Chitungwiza clinics promote disclosure and treatment "buddies."

Understanding to whom individuals disclose their status is important for several reasons. Individuals coping with any chronic, life-threatening illness do better on indices of illness self-management (Gallant, 2003) when supported by others. In the current study, family members were the most frequent group disclosed to, accounting for over 75% of the disclosures. Close family networks may provide both tangible and social support to HIV positive individuals. Wong et al. (2009) found in South Africa that 77% of adults who disclosed indicated gains in social support, most commonly from family members. Disclosures to family members may also be necessitated by physical proximity.

Over 85% of the disclosures occurred in a positive manner (i.e. either the participant herself disclosed or asked a third person to disclose on her behalf) and the vast majority of persons reacted positively to the disclosure (i.e. offered to help), which is consistent with findings elsewhere in SSA (Deribe et al., 2008; Wong et al., 2009). Religious leaders, though least frequent disclosure targets, reacted the most positively. This finding highlights the supportive but under-utilized role that religious leaders can play.

Partners reacted positively for over 70% of the disclosures but were still the group to react the least positively. Disclosure dynamics between sexual partners is complicated by implications for the male partner's HIV status, his potential guilt or anger, and his resulting medical and financial responsibilities towards his partner and potential children.

While the majority of women in our study reported positive reactions to their disclosures, we do not want to minimize the negative reactions that can occur. Six women reported angry reactions and none reported physical violence. Previous studies in SSA reported rates of violence from ranging from three to 15% following disclosures (Issiaka et al., 2001; Koenig & Moore, 2000; Medley et al., 2004). Martin-Herz et al. (2006) reported that pregnant Zimbabwean women were certainly concerned about violence when disclosing. The low reports of violence in the current study may reflect successful violence prevention interventions, including Zimbabwean legislative reforms ("Zimbabwe: Recent domestic violence legislation and its implementation," 2007). Alternatively, experiencing violence may be so highly stigmatized in this community that the women felt uncomfortable reporting them.

Factors associated with HIV disclosure to partners

Being married in our cohort was associated with HIV disclosure to current partner/husband. In Zimbabwe, prevention messages encourage women to disclose to their partners and use condoms (Meekers, 2001). We found increased disclosure and condom usage among married women, potentially due to two reasons: one, prevention messages may specifically target married couples, and, two, women may be using condoms for both HIV transmission and pregnancy preventions. Our findings also suggest that divorced or separated women were less likely to disclose to their current partner. Prevention programs targeting partner disclosures may therefore wish to tailor their messages for unmarried, divorced, or separated women, cognizant of potential risks for negative consequences faced by these women.

The relationship between age at menses and disclosure to partners is less clear. Later age at menses in our cohort highly correlated with later age at sexual initiation (rho=0.33, p<0.0001). Age at sexual initiation, however, was not significantly correlated with disclosure to partners. Otherwise, later age at sexual initiation may have signaled more emotional maturity and, therefore, a higher likelihood of disclosing to partners.

Psychosocial correlates of HIV disclosure

Our findings indicated that the more positive the women's disclosure beliefs, the lower the reported perceived stigma. Research among African immigrants in London found that those

who disclosed to more than one person reported lower perception of social stigma (Calin, Green, Hetherton, & Brook, 2007). This has implications for our findings in that if a woman has more positive beliefs about disclosures, then her subjective experience of others' responses to her disclosure may be more positive. Therefore, she may perceive less stigma. Similarly, our results indicated the more positive a woman's disclosure beliefs were, the higher self-esteem she reported. Indeed, we also found that the more positive a woman's disclosure beliefs were, the fewer depressive symptoms she reported, an association reported by others (rho=−0.24 to −0.41) (Berger et al., 2001; Franke et al., 2008).

We did not find significant associations between disclosure beliefs and quality of life. However, the data trended in the expected direction, which is consistent with findings reported elsewhere (Franke et al., 2008). We do know that quality of life varied significantly by the woman's ART status (i.e. waiting list vs. currently on ART) (R. Patel et al., 2009). Therefore, ART status likely confounded the relationship between disclosure beliefs and quality of life.

While positive disclosure beliefs correlated with the number of disclosures, we observed that positive disclosure beliefs—not necessarily the number of disclosures—were associated with positive psychosocial measures. This suggests that potential benefits of disclosures are not based on sheer numbers of disclosures, but rather belief systems. Our study highlights potential elements of positive disclosure belief systems. One, women more commonly disclose to female relatives, likely in a context of eliciting social support. Two, perceived stigma may impact disclosure beliefs and subsequently positive disclosure experiences may then reduce perceived stigma and encourage more positive disclosure beliefs. Therefore, promoting positive disclosure belief systems may range from encouraging women to discuss their status with female relatives to reducing community-wide stigma.

Study strengths and limitations

While our study has several strengths, including the comprehensive examination of actual disclosure patterns, its psychosocial correlates, and the use of standardized psychosocial metrics, our findings must be interpreted within the study limitations. First, we cannot ascertain causality with disclosure beliefs and psychosocial function with our cross-sectional study. Positive disclosure experiences may have led to positive disclosure beliefs and subsequently a more positive psychosocial state or the reverse. Second, some women in our cohort were relatively newly diagnosed so it is unclear if correlations of psychosocial measures have the same meaning for these women as for those who were diagnosed earlier. Third, our study used convenience sampling which may have resulted in recruitment of women who are more social or communicative and therefore, more likely to have disclosed their status than the general HIV positive population in Zimbabwe. Also, we cannot generalize our findings to men since different disclosure rates by gender exist (Mayfield Arnold, Rice, Flannery, & Rotheram-Borus, 2008). Finally, we used self-reported measures which have the inherent biases of social desirability and recall.

Summary

Our study suggests that disclosures of HIV status among positive women in Zimbabwe are common and, for the most part, occur positively. Violence following disclosure was not reported. If further validated, HIV prevention and treatment interventions should address disclosure decision-making content and give particular attention to individuals who struggle with disclosure, such as divorced or separated women. Furthermore, disclosure beliefs correlate with actual disclosures and better psychosocial health. As such, promotion of positive disclosure beliefs should be a fundamental component of HIV prevention and treatment programs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Table 1

Measures

Measure	Metric	Modifications	Reliability Cronbach's coefficient alpha (missing values, %)
HIV Disclosure Matrix *(Appendix 1)*	Modified Bauman disclosure matrix (Pequegnat, Bauman, Bray, DiClemente, Dilorio, Hopper et al., 2001)	Added potential targets and reactions; 10 "predetermined" target relationships with 11th target open-ended for "spontaneous" reports	
HIV Disclosure Beliefs[a] *Higher scores indicate more positive beliefs*	Berger HIV Stigma disclosure subscale (Berger, Ferrans, & Lashley, 2001)	Six of ten questions from the disclosure subscale were used; two additional questions were asked regarding disclosure to children	Disclosure subscale=0.58 (0)
Social Stigma *Higher scores indicate lower levels of stigma*	Berger HIV Stigma personalized and public stigma subscales (Berger et al., 2001)	12 questions were selected; 8 contributed to the personalized subscale and 9 to the public subscale (5 contributed to both)	Personalized stigma subscale=0.72 Public stigma subscale=0.79 All three Berger HIV subscales=0.81 (7, 0.002%)
Self-Esteem *Higher scores indicate higher self-esteem*	UCSF CAPS HIV Counseling and Testing Self-esteem scale (Coates, Grinstead, Gregorich, Heilbron, & al., 2000)		CAPS self-esteem scale=0.76 (0)
Depression *Higher scores indicate worse depressive symptoms*	UCSF CAPS HIV Counseling and Testing Depression scale (Coates et al., 2000) Shona Symptom Questionnaire (SSQ14) (developed and validated in Zimbabwe)[b] (Nhiwatiwa, Patel, & Acuda, 1998; Patel, Simunyu, Gwanzura, Lewis, & Mann, 1997; Patel, Todd, Winston, Gwanzura, Simunyu, Acuda et al., 1998; Stranix-Chibanda, Chibanda, Chingono, Montgomery, Wells, Maldonado et al., 2005)	Questions about somatic symptoms were removed from analysis to avoid conflating HIV disease symptoms with depressive symptoms (Kalichman, Rompa, & Cage, 2000)	CAPS depression scale=0.75 (0) SSQ14=0.86 (0) Both depression scales=0.80 (0)
Quality of Life (QOL)[a] *Higher scores indicate higher QOL*	Medical Outcomes Study-HIV QOL (Taylor, Dolezal, Tross, & Homes, In press; Wu, Revicki, Jacobson, & Malitz, 1997)	Subscales transformed on 0–100 scale to have mean of 50 and standard deviation of 10(Revicki, Sorensen, & Wu, 1998) Factor analysis used to construct Physical and Mental Health Summary scores (Revicki et al., 1998)	Range from mental health subscale=0.62 to health distress subscale=0.92 (6, 0.001%)

[a] Missing values imputed with subscale average when more than half the values were present.

[b] A second scale was used for the purpose of further validation of the SSQ14; nonetheless, SSQ14 was the preferred depression measurement tool because it was developed locally.

Table 2

Patterns of HIV disclosures for predetermined relationships (n=200)

Target for HIV disclosure	Disclosed to target Percent[a] (n)	Positive disclosure manner Percent[b] (n)	Positive target reaction Percent[b] (n)
Current husband/partner	78 (87)	91 (79)	76 (66)
Most recent child's father	77 (85)	91 (77)	72 (61)
Your child/children	49 (96)	98 (94)	86 (83)
Your mother	63 (75)	93 (70)	84 (63)
Your father	49 (38)	92 (35)	89 (34)
Your sister (closest)	67 (127)	95 (121)	86 (109)
Your brother (closest)	49 (90)	93 (84)	91 (82)
Your uncle	25 (48)[c]	85 (41)	81 (39)
Your best friend	51 (100)	96 (96)	93 (90)
Your church or religious leader	19 (37)	92 (34)	95 (35)
Others	35 (69)	91 (63)	84 (58)

[a] Percent of HIV disclosure to target based on number disclosed to divided by the total number of applicable relationship to target

[b] Percent of HIV disclosure manner and positive target reaction are respective numbers divided by the total number of targets disclosed to

[c] Missing one value

Table 3

Socio-demographic correlates of HIV disclosure, grouped by disclosure to current husband/partner

Variable[d]	Entire cohort (n=200)	Disclosed to current partner (n=87)	Not disclosed to current partner (n=24)	p-value
Age	36 (8.3)	34 (7.8)	35 (7.7)	0.44[a]
Age categories				0.34[b]
18–27	11 (22)	20 (17)	8.3 (2)	
28–37	52 (103)	55 (48)	63 (15)	
≥38	38 (75)	25 (22)	29 (7)	
Highest education completed				0.17[b]
Primary school or less	31 (61)	21 (18)	38 (9)	
Secondary school up to Form 2	23 (46)	30 (26)	25 (6)	
Secondary school up to Form 4	42 (83)	46 (40)	33 (8)	
Higher secondary, college, or vocational	5.0 (10)	3.5 (3)	4.2 (1)	
Marital Status				<0.0001[c]
Currently married	37 (74)	78 (68)	17 (4)	<0.0001[c]
Divorced/Separated	21 (41)	11 (10)	58 (14)	<0.0001[c]
Widowed	41 (82)	10 (9)	13 (3)	0.72[c]
Single/never married	1.0 (2)	0	8.3 (2)	0.05[c]
Cohabitating	0.50 (1)	0	4.2 (1)	0.22[c]
Employment				0.59[c]
Formal employment	7.5 (15)	9.2 (8)	8.3 (2)	
Self-employment	47 (94)	43 (37)	50 (12)	
Unemployed	45 (89)	47 (41)	38 (9)	
Other-student, etc.	1.0 (2)	1.2 (1)	4.2 (1)	
Housing status				0.95[c]
Own	46 (91)	39 (33)	33 (8)	
Rent	14 (27)	14 (12)	12 (3)	
Lodge	41 (82)	48 (42)	54 (13)	
Household commodities				0.81[c]
≤5	64 (127)	63 (55)	58 (14)	
>5	37 (73)	37 (32)	42 (10)	
Household members				
Husband/boyfriend	30 (59)	63 (55)	17 (4)	<0.0001[c]
Parents	16 (32)	6.9 (6)	8.3 (2)	0.68[c]
Children	70 (139)	69 (60)	71 (17)	1.0[c]
Other	22 (43)	21 (18)	21 (5)	1.0[c]
Religion[f]				0.14[c]
Catholic/Anglican/Methodist	37 (74)	37 (32)	38 (9)	

Variable[d]	Entire cohort (n=200)	Disclosed to current partner (n=87)	Not disclosed to current partner (n=24)	p-value
Pentecostal churches	36 (71)	36 (31)	46 (11)	
Apostolic	18 (36)	17 (15)	8.3 (2)	
Other/Traditional/No religion	9.0 (18)	10 (9)	8.3 (2)	
Rep./Sexual Health				
No. of pregnancies	3.2 (1.8)	3 (1.6)	2.9 (1.6)	0.42[b]
Age at menses	15 (1.9)	15 (1.8)	14 (1.6)	0.021[a]
Age at 1st sexual encounter	19 (3.0)	19 (3.1)	18 (2.7)	0.14[a]
No. of sexual partners in last year	0.60 (0.66)	0.95 (0.65)	0.64 (0.49)[e]	0.0080[b]
No. of lifetime sexual partners	3.4 (9.7)	2.7 (5.0)	11 (26)[e]	0.12[b]
Ever used condoms	47 (93)	69 (60)	42 (10)	0.018[c]

[a] Two-sided Student t-test

[b] Two-sided Wilcoxon Rank Sum test

[c] Two-sided Fisher's Exact test

[d] Means (SD or standard deviation) reported for continuous variables and percents (n) for categorical variables

[e] Missing two values

[f] Missing one value

Table 4

Clinical correlates of HIV disclosure, grouped by disclosure to current husband/partner

Variable[d]	Entire cohort (n=200)	Disclosed to current partner (n=87)	Not disclosed to current partner (n=24)	p-value
Clinical Measures of HIV infection				
Duration since diagnosis in years	2.0 (2.0)	2.2 (1.7)	1.4 (1.8)	0.0028[b]
Duration of ART in months	15 (9.3)	15 (10)	15 (6.4)	0.59[b]
No. of self-reported AIDS-related illnesses in last year (out of 12)	5.5 (2.7)	5.2 (3.0)	6.8 (2.4)	0.0068[a]
No. of medically-assessed symptoms in last week (out of 25)	7.3 (3.7)	7.3 (3.6)	8.9 (4.7)	0.12[a]
No. of medically-assessed symptoms in last week at baseline (out of 25)[e]	4.1 (2.7)	4.3 (2.6)	3.1 (2.5)	0.055[a]
ART status				0.0051[c]
Ineligible for treatment	16 (31)	22 (19)	13 (3)	0.40[c]
Eligible and waiting for treatment	37 (73)	30 (26)	67 (16)	0.0017[c]
On treatment	48 (96)	48 (42)	21 (5)	0.020[c]
Baseline CD4 count (cells/mm^3)[f]				0.97[c]
<50	13 (16)	10 (6)	14 (1)	
50–99	14 (17)	12 (7)	0	
100–199	33 (41)	31 (18)	43 (3)	
200–349	20 (25)	19 (11)	14 (1)	
>=350	21 (26)	29 (17)	29 (2)	
Mean (SD)	233 (232)	252 (210)	255 (204)	0.97[a]
Current CD4 count (cells/mm^3)				0.49[c]
<50	5.0 (10)	3.5 (3)	8.3 (2)	
50–99	11 (22)	9.2 (8)	17 (4)	
100–199	22 (43)	24. (21)	21 (5)	
200–349	27 (53)	22 (19)	25 (6)	
>=350	36 (72)	41 (36)	29 (7)	
Mean (SD)	300 (199)	326 (213)	254 (188)	0.11[a]
Baseline WHO Clinical Stage of HIV infection[g]				0.25[c]
1	19 (38)	28 (24)	13 (3)	
2	21 (41)	21 (18)	17 (4)	
3	57 (113)	48 (42)	71 (17)	
4	3.0 (6)	3.5 (3)	0	
Mean (SD)	2.4 (0.83)	2.3 (0.91)	2.6 (0.72)	0.09[a]

[a]Two-sided Student t-test

[b]Two-sided Wilcoxon Rank Sum test

[c]Two-sided Fisher's Exact test

[d]Means (SD or standard deviation) reported for continuous variables and percents (n) for categorical variables

[e]Missing a total number of 35 values, 19 for disclosed group and 2 for not-disclosed group

[f]Missing a total number of 75 values, 28 for disclosed group and 17 for not-disclosed group

[g]Missing a total number of 2 values, none for disclosed group or not-disclosed group

Table 5

Logistic regression modeling of correlates of HIV disclosure to current husband/partner

Variable	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	*p*-value	OR (95% CI)	*p*-value
Age, category	1.4 (0.71, 2.9)	0.32	--	--
Education, category	0.69 (0.41, 1.2)	0.16	--	--
Employment, category	0.94 (0.48, 1.8)	0.86	--	--
Household goods, category	1.2 (0.49, 3.1)	0.66	--	--
Currently married	18 (5.5, 59)	<0.0001	12 (3.3, 45)	0.00020
Living with current husband/partner	0.12 (0.037, 0.37)	0.00030	--	--
Age at menses	0.74 (0.56, 0.97)	0.031	0.71 (0.51, 1.0)	0.051
Number of sexual partners in last year	0.26 (0.089, 0.75)	0.013	0.67 (0.28, 1.6)	0.38
Number of lifetime sexual partners	1.0 (1.0, 1.1)	0.072	--	--
Ever used condom	0.32 (0.13, 0.82)	0.017	0.68 (0.20, 2.3)	0.52
Duration since HIV diagnosis	0.70 (0.50, 0.99)	0.044	0.85 (0.57, 1.3)	0.41
ART status	0.73 (0.41, 1.3)	0.30	--	--
No. of self-reported AIDS-related illnesses in last year	1.2 (1.0, 1.4)	0.016	1.2 (0.95, 1.5)	0.14
No. of medically-assessed symptoms in last week at baseline	0.82 (0.66, 1.0)	0.061	--	--

Table 6

Correlations between HIV disclosure and psychosocial measures

Variable	Total number of HIV disclosures ρ=rho (*p*-value)	HIV Disclosure Beliefs Scale ρ=rho (*p*-value)
Stigma		
Berger Stigma personalized subscale (out of 32)[a]	0.032 (0.66)	0.45 (<0.0001)
Berger Stigma public subscale (out of 36)[a]	0.15 (0.036)	0.51 (<0.0001)
Self-Esteem		
CAPS Self-Esteem Scale score (out of 36)[b]	0.12 (0.097)	0.15 (0.035)
Depression		
CAPS Depression Scale score (out of 28)[c]	0.095 (0.18)	−0.11 (0.12)
Shona Symptom Questionnaire (SSQ14) score (out of 48)[c]	0.031 (0.66)	−0.14 (0.048)
MOS-HIV QOL		
Mean score on MOS-HIV QOL	0.077 (0.28)	0.12 (0.093)
Physical Health Summary	−0.016 (0.83)	0.12 (0.092)
Mental Health Summary	0.099 (0.16)	0.074 (0.30)

[a]Higher scores indicate lower stigma levels, are more favorable

[b]Higher scores indicate higher self-esteem levels, are more favorable

[c]Lower scores indicate less depression levels, are more favorable