

## Factors influencing social self-disclosure among adolescents living with HIV in Eastern Africa

Christiana Nöstlinger<sup>a,\*</sup>, Sabrina Bakeera-Kitaka<sup>c,d</sup>, Jozefien Buyze<sup>b</sup>, Jasna Loos<sup>a</sup> and Anne Buvé<sup>a</sup>

<sup>a</sup>Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; <sup>b</sup>Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; <sup>c</sup>Baylor-Uganda, Kampala, Uganda; <sup>d</sup>Department of Paediatrics, Makerere University, Kampala, Uganda

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Adolescents living with HIV (ALHIV) face many psychosocial challenges, including HIV disclosure to others. Given the importance of socialization during the adolescent transition process, this study investigated the psychological and social factors influencing self-disclosure of own HIV status to peers. We examined social HIV self-disclosure to peers, and its relationship to perceived HIV-related stigma, self-efficacy to disclose, self-esteem, and social support among a sample of  $n = 582$  ALHIV aged 13–17 years in Kampala, Uganda, and Western Kenya. Data were collected between February and April 2011. Among them, 39% were double orphans. We conducted a secondary data analysis to assess the degree of social disclosure, reactions received, and influencing factors. Interviewer-administered questionnaires assessed medical, socio-demographic, and psychological variables (Rosenberg self-esteem scale; self-efficacy to disclose to peers), HIV-related stigma (10-item stigma scale), and social support (family–life and friends). Descriptive, bivariate, and logistic regression analyses were performed with social self-disclosure to peers with gender as covariates. Almost half of ALHIV had told nobody (except health-care providers) about their HIV status, and about 18% had disclosed to either one of their friends, schoolmates, or a boy- or girlfriend. Logistic regression models revealed that having disclosed to peers was significantly related to being older, being a paternal orphan, contributing to family income, regular visits to the HIV clinic, and greater social support through peers. Low self-efficacy to disclose was negatively associated to the outcome variable. While social self-disclosure was linked to individual factors such as self-efficacy, factors relating to the social context and adolescents' access to psychosocial resources play an important role. ALHIV need safe environments to practice disclosure skills. Interventions should enable them to make optimal use of available psychosocial resources even under constraining conditions such as disruptive family structures.

**Keywords:** adolescence; HIV; self-disclosure; peers; psychosocial support

### Introduction

With increasing access to antiretroviral treatment (ART) in low-resource settings greater numbers of children are surviving into adolescence and adulthood (Judd et al., 2007; Mofenson & Cotton, 2013). In 2012, approximately 2.1 million adolescents (aged 10–19 years) were living worldwide with HIV, the vast majority perinatally infected (Sohn & Hazra, 2013). In Uganda and Kenya, where this study was conducted, 4% and 3% respectively of all young women and 2.3% and 1.5% of all young men are estimated to be living with HIV (National AIDS Control Council of Kenya, 2014; UNAIDS, 2013).

Adolescents living with HIV (ALHIV) face significant clinical and psychosocial challenges, including retention in care and adherence to treatment (Gray, 2010; Lyon & D'Angelo, 2009). Psychosocial challenges relate to developing a sexual and social identity, gaining independence, and more generally coping and living well with HIV (Bakeera-Kitaka, Nabukeera-Barungi, Nöstlinger, Addy, & Colebunders, 2008). Adolescence is a transitioning period, in which building social relationships with peers play an

important part for identity development in the context of increased autonomy (Hazen, Schlozman & Beresin, 2008; Kang, Mellins, Ng, Robinson, & Abrams, 2008), thus mutually disclosing friendships and intimate relationships become important (Sherman, Bonanno, Wiener, & Battles, 2000). However, the stigma linked to HIV presents interpersonal challenges (Evangeli & Foster, 2014), making it difficult for ALHIV to be open about HIV (Abadía-Barrero & Castro, 2006; Birungi, Obare, Mugisha, Evelia, & Nyombi, 2009; Martinez et al., 2012; Rongkavilit et al., 2010). Available evidence suggests that HIV disclosure has both negative and positive consequences (Rodkjaer, Sodemann, Ostergaard, & Lomborg 2011; Stutterheim et al., 2011; Vreeman et al., 2010), obviously resulting in difficult decision-taking. Being open about one's HIV status may simplify the process of getting social support from significant others such as families and peers, which in turn is a prerequisite for constructive coping, enhanced self-esteem, adherence, and other health-promoting behaviors (Lam, Naar-King, & Wright, 2007; Murphy, Moscicki, Vermund, & Muenz, 2000). Several studies among ALHIV have

\*Corresponding author. Email: [cnoestlinger@itg.be](mailto:cnoestlinger@itg.be)

shown positive health effects, i.e., better immunological recovery, associated with disclosure (Calabrese et al., 2012, Sherman et al., 2000). Disclosure may help to buffer HIV-related stress (Li, Lee, Thammarawijaya, Jiraphongsa, & Rotheram-Borus, 2009), but may also evoke fear of rejection and breach of confidentiality (Foster, Waelbrouck, & Peltier, 2007), bearing the real risk of stigma and discrimination. Keeping one's HIV status secret because of the many challenges linked to HIV stigma potentially hampers ALHIV's social support and bonding with peers (Menon, Glazebrook, Campain, & Ngoma, 2007; Serovich, Craft, & Reed, 2012). Studies on disclosure practices reveal that ALHIV invest considerable efforts in hiding their condition from friends, family, doctors, and even themselves (Rao, Kekwaletswe, Hosek, Martinez, & Rodriguez, 2007) basically as a way to manage HIV-related stigma.

So far, little is known about experiences, consequences, and factors that precede HIV self-disclosure among ALHIV once they are informed about their own HIV status. In the current study, we examine social HIV self-disclosure to peers, perceived HIV-related stigma, self-esteem, and social support among a sample of ALHIV in Uganda and Kenya. More specifically we assessed the degree social self-disclosure, and identified which psychological and social factors are independently associated with social HIV self-disclosure.

## Methods

This study is based on a secondary analysis of data from a baseline assessment conducted for the formative evaluation of a positive prevention intervention for ALHIV (Nöstlinger et al., 2015).

### *Study subjects and settings*

Adolescent study participants were recruited from several health-care facilities providing HIV care for children and/or adolescents in the greater urban region of Kampala, Uganda, and Nyanza province, Kenya. In Kenya, participants were recruited from health-care facilities (e.g., clinics in district hospitals, youth centers providing HIV testing, community-based health centers) based in rural communities on the shore of Lake Victoria (Asembo and Gem) and Kisumu town (Nyanza province). In Kampala, we recruited participants from the Pediatric Infectious Diseases Clinic (managed by Baylor-Uganda), and selected community-based sites providing treatment and support.

In line with the intervention, we recruited ALHIV aged 13–17 years who were never married or cohabitating, willing to participate in the intervention study, and living within 25 km of the study sites. Study participants received no incentives, but transport remuneration and refreshments were provided.

### *Procedures and ethical aspects*

Clinic staff at the above-mentioned sites invited ALHIV eligible for study participation. Parents/guardians provided informed consent, and ALHIV provided assent. Interviewers were hired for the study purpose and were independent from regular service provision staff. They received a standardized one-week training in interviewing skills with adolescents, ethics, and confidentiality.

The study obtained ethical approval through KEMRI Ethical Review Committee (ERC), Makerere University College of Health Sciences Ethical Review Committee, Baylor College of Medicine Ethical Review Board, Uganda National Council of Science and Technology, the Institutional Review Board of Institute of Tropical Medicine, and the Ethics Committee of the University Teaching Hospital of Antwerp.

### *Data collection and study variables*

Between February and April 2011, we conducted interviewer-administered face-to-face interviews using a standardized electronic questionnaire stored on hand-held computers (survey-to-go®). Study participants were interviewed about their socio-demographic and health-related characteristics, and attitudes and practices in relation to positive living. Additional questions of interest to this study included adherence, HIV disclosure, self-efficacy to disclose, self-esteem, and social support as outlined below.

#### *Adherence*

We measured adherence using the validated CASE adherence index (Mannheimer et al., 2006). The index is composed of three items measuring adherence difficulties, frequency of missing ART doses, and time when last dose was missed. The computed score indicates good or poor adherence.

#### *HIV disclosure*

Study participants chose from a list persons in their personal environment who knew about their HIV status. Using the same list, they reported who they had self-disclosed HIV to (e.g., “Who of these people did *you* tell...?”). In line with the literature (Lyimo et al., 2014) we computed a cumulative score, adding up the number of categories of people who knew about the participants' HIV status, and who ALHIV had actively disclosed to. We computed a binary score for “social self-disclosure among peers” based on whether or not ALHIV had self-disclosed to at least one of the following categories among their peers: friend(s), boy-/or girlfriend, schoolmates. We assessed positive and negative reactions received upon disclosure, and asked whether they felt that the reaction was helpful.

*Self-efficacy to disclose HIV*

We constructed a scale to assess ALHIV's self-efficacy to disclose in analogy to the self-efficacy scale to negotiate condom use (Rotheram-Borus et al., 1997). ALHIV could rate their self-confidence in terms of being able to disclose their HIV status by indicating how much they agreed to five statements pertaining to the process of disclosure (e.g., "I am confident that I can decide myself who is the right person to tell...").

*Self-esteem*

We used the Likert-type scale by Rosenberg (1965), containing 10 items measuring global self-esteem. This scale has been widely used in cross-cultural settings (Lorenzo-Hernandez & Ouellette, 1998) with reported good validity and reliability (Cronbach's alphas for the English version = 0.78).

*HIV-related stigma*

ALHIV answered question on HIV-related stigma, using the shortened HIV Stigma Scale (10 items; Wright, Naar-King, Lam, Templin, & Frey 2007), which yielded good psychometric properties in a sample of predominantly HIV positive African-American youth. The scale consists of four subscales (personalized stigma, disclosure, negative self-image, and public attitudes with good Cronbach's alphas ranging from 0.72 to 0.84).

*Social support by family and peers*

We used two specific subscales of the European health-related quality of life (HQOL) instrument "KIDSCREEN" (Ravens-Sieberer et al., 2008, 2010), measuring the latent constructs "support by family-life" and "support by friends". Previously, we had systematically translated and linguistically adapted the full instrument into Luganda, Dhuluo, and Eastern African English. These versions yielded good psychometric properties (Cronbach's alphas around 0.70 for the different subscales), indicating that they were suitable for low-resource settings (Masquillier, Wouters, Loos, & Nöstlinger, 2012).

*Statistical analysis*

Data entered on the tablets were automatically stored and exported to SPSS 20.0 for data cleaning and analysis. We employed descriptive univariate analysis to describe the sample stratified by gender in terms of their socio-demographic- and health-related background characteristics, HIV disclosure, and psychosocial constructs as described above. Where scales were used, we computed the Cronbach's alphas to check for internal consistency.

In line with available evidence (Smith, Rossetto, & Peterson, 2008), we hypothesized that social self-

disclosure among peers (as defined above) was predicted by higher self-esteem and better self-efficacy to disclose, by greater perceived social support through family and peers, and by less perceived HIV-related stigma. To test these relationships, we performed bivariate analyses using chi square/Fisher's exact tests or *t*-tests according to variable properties. Finally, a logistic regression model was fitted with social self-disclosure as outcome and the predictors that were associated in the bivariate analysis with a *p*-value < 0.05 and gender as covariates. All relations were described as odds ratios (OR) with their 95% confidence intervals (CI) and *p*-values.

**Results***Participants' characteristics*

Complete questionnaires were available for 582 adolescents including 263 boys (45.2%) and 319 girls (54.8%). Table 1 shows the sample's selected socio-demographic- and health-related background characteristics.

The majority of adolescents in our sample were enrolled in school. Overall, self-reported health status was good; almost all participants were enrolled in an HIV clinic with 463 ALHIV (80.9%) reporting monthly clinic visits. More than two-thirds were on ART, and good adherence was reported for three quarters of the ALHIV on medication. More than half of the sample received support for taking their medication from parents or guardians (330/405 or 81.4%).

*HIV disclosure*

In total, 253 participants 43.5% reported that they had told nobody (except health-care providers) about their HIV status. The mean number of people (other than medical staff) who knew about participants' HIV status was 2.7 (SD = 1.2). The mean number of people who study participants had actively informed about their HIV status was 0.7 (SD = 0.9; boys: 0.8, SD = 1.0; girls: 0.7, SD = 0.9).

About 104 participants (17.9%) reported social self-disclosure to peers (boys: 49/18.6%; girls: 55/17.2%). Among them, the majority received rather positive reactions (83/72.2%; boys: 38/71.1%; girls: 45/72.6%), which they found helpful. Few said that the reactions were never helpful (9/7.8%; boys: 4/7.5%; girls: 5/8.1%). Of those who reported to have a girlfriend/boyfriend (i.e., 233/40% of the total sample; boys: 99/37.6%; girls: 134/42%), 80 or 34.3% talked about their HIV status within this relationship (boys: 30/30.3%; girls: 50/37.3%). The majority reported positive reactions (53/66.3%; boys: 19/63.3%; girls: 34/68.0%), and found it sometimes or always helpful (65/81.2%; boys: 28/93.4%; girls: 37/77%).

Table 1. Participants' characteristics.

Characteristics	Total (n = 582)		Male adolescents (n = 263)		Female adolescents (n = 319)	
	n	%	n	%	n	%
<i>Socio-demographic characteristics</i>						
Country						
Uganda	299	51.4	122	46.6	177	55.5
Kenya	283	48.6	141	53.6	142	44.5
Age in years (mean, SD)	14.6 (1.4)	–	14.6 (1.4)	–	14.7 (1.4)	–
Living with one or both (biological) parents	302	51.9	137	52.1	165	51.7
Double orphans	226	38.8	108	41.1	118	37.0
Enrolled in school	515	88.5	242	92.0	273	85.6
Contributing to family income	73	12.5	43	16.3	30	9.4
<i>Health-related characteristics</i>						
Self-perceived health status						
Excellent/very good	180	31.0	85	32.4	95	29.7
Good	200	34.4	83	31.6	117	36.7
Fair/poor	202	34.8	95	36.1	107	33.6
Years since learning about HIV status (mean, SD)	3.5 (2.5)	–	3.7 (2.6)	–	3.4 (2.4)	–
Enrolled in HIV clinic	572	98.3	262	99.6	310	97.2
Member of a support group	257	44.2	123	46.8	134	42.0
Currently on ART	405	69.6	187	71.1	218	68.3
Adherence score <sup>a</sup>						
Good adherence	305	75.1	144	76.7	161	73.9
Poor adherence	101	24.9	44	23.4	57	26.1
Disclosure						
Who knows about your HIV status (mean; SD)	2.7 (1.2)	–	2.7 (1.2)	–	2.7 (1.2)	–
Who did you tell about your HIV status (mean; SD)	0.7 (0.9)	–	0.8 (1.0)	–	0.7 (0.9)	–
Social disclosure to friend/peers/boy- or girlfriend (i.e., disclosed to at least one of them)	104	19.9	49	18.6	55	17.2

SD, standard deviation; ART, antiretroviral therapy.

<sup>a</sup>CASE adherence index: range 3–16 (>10 = good adherence, ≤10 = poor adherence).

### Participants' psychosocial characteristics

Table 2 shows important psychological constructs believed to influence HIV disclosure. The majority's self-efficacy to disclose was in the middle range of the scale, and about a quarter showed low self-efficacy in this respect. Cronbach's alphas for this scale was 0.76, indicating good internal consistency. Most ALHIV had normal ranges of self-esteem, while about 10% showed low self-esteem (Cronbach's alphas for this scale was 0.62). Reported levels of self-perceived stigma were in the medium range, with the highest scores for personalized stigma, which measures aspects of socializing with peers and reactions to HIV received by others. Cronbach's alpha for the stigma scale was 0.72. ALHIV evaluated support received through family life as relatively better than support by peers (mean scores of 24/35 as compared to 15.6/30 respectively). These scales had good internal consistencies with Cronbach's alphas of 0.76 and 0.82 respectively.

### Factors influencing social disclosure among peers

The bivariate analysis (see Table 3) showed that adolescents from the Ugandan sites more often reported social self-disclosure than participants in Kenya. Other variables that were significantly associated were older age, being a paternal orphan, having to contribute to family income, attending the HIV monthly or more often, higher self-efficacy to disclose, lower levels negative self-image and having experienced less stigmatizing public attitudes (as measured by the stigma scale), and more perceived social support through peers.

Logistic regression models compared ALHIV who reported social disclosure to peers to their counterparts who had never disclosed to any of their friends, boy-/girlfriends, or peers. Table 4 shows the fitted model. Statistically significant associations retained in the model were: Being older, being a paternal orphan, having to contribute to family income, visiting the HIV clinic regularly (each two to three months or more often), and

Table 2. Psychosocial characteristics.

	Total ( <i>n</i> = 582)		Male adolescents ( <i>n</i> = 263)		Female adolescents ( <i>n</i> = 319)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Self-efficacy to disclose <sup>a</sup>						
Low (<8)	140	24.5	64	24.9	76	24.1
Medium (8–12)	380	66.4	171	66.5	209	66.3
High (13–15)	52	9.1	22	8.6	30	9.5
Mean score (SD)	9.0 (2.7)	–	9.0 (2.7)	–	9.1 (2.6)	–
Self-esteem <sup>b</sup>						
Low (<15)	59	10.4	26	10.0	33	10.6
Normal (15–25)	495	87.0	225	86.9	270	87.1
High (26–30)	15	2.6	8	3.1	7	2.3
Mean score (SD)	18.4 (3.1)	–	18.5 (3.3)	–	18.2 (3.0)	–
HIV-related stigma: mean (SD) <sup>c</sup>						
	24.3 (3.8)	–	24.5 (3.9)	–	24.1 (3.8)	–
Stigma subscales: mean (SD) <sup>d</sup>						
Negative self-image: mean (SD)	6.6 (1.7)	–	6.7 (1.7)	–	6.6 (1.7)	–
Personalized stigma: mean (SD)	6.9 (1.6)	–	7.0 (1.6)	–	6.8 (1.6)	–
Stigma disclosure: mean (SD)	5.7 (1.0)	–	5.8 (1.1)	–	5.7 (1.0)	–
Public attitudes: mean (SD)	5.1 (1.2)	–	5.1 (1.2)	–	5.0 (1.3)	–
Social support (KIDSCREEN subscales)						
Parents and home life: mean (SD) <sup>e</sup>	24.0 (5.7)	–	24.1 (5.6)	–	24.0 (5.8)	–
Social support by peers: mean (SD) <sup>f</sup>	15.6 (6.2)	–	16.5 (5.7)	–	14.9 (6.5)	–

SD, standard deviation; <sup>a</sup>range: 0–15 (higher values indicate higher self-efficacy); <sup>b</sup>range: 0–30 (higher values indicate higher self-esteem); <sup>c</sup>range: 1–40 (higher values indicate higher levels of perceived HIV-related stigma); <sup>d</sup>range: 1–10 (higher values indicate higher levels of stigma as measured by the specific subscales); <sup>e</sup>range: 1–35 (higher values indicate better parent relations/home life); <sup>f</sup>range: 1–30 (higher values indicate more social support by peers).

greater social support through peers were independently and positively associated with social HIV self-disclosure to peers. Having a low self-efficacy to disclose was significantly and negatively associated with the outcome variable.

## Discussion

This study conducted in two regions of Uganda and Kenya is one of the few studies so far to examine social self-disclosure among ALHIV. Overall, one in five participants reported to have told their HIV status to their peers. Other studies have found similar or higher rates of disclosure (Birungi et al., 2009; Lee & Oberdorfer, 2009). Given the amount of anxiety and fear surrounding adolescent HIV self-disclosure (Mburu et al., 2014; Orban et al., 2010) this is not surprising.

We examined the relationship between social self-disclosure and selected psychosocial determinants and found significant associations in the expected directions for self-efficacy and social support by peers to disclose. Perceived HIV-related stigma was not retained in the final regression model as a significant predictor, while the construct self-esteem did not reach significance in the bivariate analysis.

Being older was a significant predictor for social self-disclosure. Given the increasing cognitive and reflective skills, which are linked to the adolescent

maturation process, this is not surprising. Older adolescents may not only have had more opportunities to disclose as they grow up (Wiener & Battles, 2006), they can also be expected to be better equipped to anticipate positive and negative effects of disclosure decisions than younger adolescents; more generally, they may take decision more independently in search for their autonomy (Michaud et al., 2009).

It should be noted that a large sub-group in our sample had suffered the loss of one or two parents, creating potentially unstable family contexts (Loos et al., 2012). This may prematurely force them into independence, which can also serve as an explanation for the finding that paternal orphans were twice as likely to have disclosed to one of their peers. Evidence shows that families avoid HIV disclosure because of fear that stigma may affect the whole family (Wiener, Battles, & Heilman, 2000). Parents living with HIV have particular reasons to not disclose due to their own feelings of guilt and shame (Nöstlinger, Bartoli, Gordillo, Roberfroid, & Colebunders, 2006; Waugh, 2003). This can partially explain why foster families encourage disclosure, while HIV-positive mothers rather advise their adolescent children not to reveal their status (Michaud et al., 2009). Adolescents who had to contribute to the family income were also two times more likely to have disclosed to their peers than those who did not have to bring cash home. Again, this

Table 3. Variables linked to social disclosure to peers.

Variable	Social disclosure ( <i>n</i> = 104)		No social disclosure ( <i>n</i> = 478)		<i>p</i> -value
	<i>n</i>	%	<i>n</i>	%	
Gender					0.74
Male	49	18.6	214	81.4	
Female	55	17.2	264	82.8	
Country					0.02*
Uganda	65	21.7	234	78.3	
Kenya	39	13.8	244	86.2	
Age in years: mean (SD)	15.0 (1.4)	–	14.6 (1.4)	–	0.003*
Currently in school					0.40
Yes	95	18.4	420	81.6	
No	9	13.4	58	86.6	
Parents alive					0.008*
Yes	18	13.7	113	86.3	
Father died	37	27.2	99	72.8	
Mother died	17	19.3	71	80.7	
Both died	32	14.2	194	85.5	
Contributes to family income					0.001*
Yes	24	32.9	49	67.1	
No	80	15.7	429	84.3	
Health					0.79
Excellent	14	19.4	58	80.6	
Very good	21	19.4	87	80.6	
Good	37	18.5	163	81.5	
Fair	28	17.0	137	83.0	
Poor	4	10.8	33	89.2	
Years since learning about HIV diagnosis: mean (SD)	3.8 (2.5)	–	3.5 (2.5)	–	0.33
Enrolled in HIV clinic					0.40
Yes	101	17.7	471	82.3	
No	3	30.0	7	70.0	
Frequency of clinic visits					0.03*
Once a month or more often	91	19.7	372	80.3	
Once every 2–3 months	10	9.3	97	90.7	
Less often than every 3 months	0	0.0	2	100.0	
Member of a support group					0.58
Yes	49	19.1	208	80.9	
No	55	16.9	270	83.1	
Currently taking ART					0.48
Yes	77	19.0	328	81.0	
No	26	15.0	147	85.0	
Don't know	1	25.0	3	75.0	
Support from family to take ART					0.74
Parent/guardian					
Yes	61	18.5	269	81.5	
No	43	17.1	209	82.9	
Adherence score					0.54
Good adherence	56	18.4	249	81.6	
Poor adherence	22	21.8	79	78.2	
Never	45	17.8	208	82.2	
Self-esteem: mean (SD)	18.3 (3.0)	–	18.4 (3.2)	–	0.91
Self-esteem					0.96
Low (<15)	10	16.9	49	83.1	
Normal (15–25)	89	18.0	406	82.0	
High (26–30)	3	20.0	12	80.0	

Table 3. (Continued)

Variable	Social disclosure ( <i>n</i> = 104)		No social disclosure ( <i>n</i> = 478)		<i>p</i> -value
	<i>n</i>	%	<i>n</i>	%	
Self-efficacy: mean (SD)	10.3 (2.3)	–	8.8 (2.7)	–	<0.0001*
Self-efficacy					<0.0001*
Low (<8)	9	6.4	131	93.6	
Normal (8–12)	77	20.3	303	79.7	
High (13–15)	17	32.7	35	67.3	
HIV-related stigma: mean (SD)	23.9 (3.9)	–	24.4 (3.8)	–	0.23
Negative self-image: mean (SD)	6.3 (1.7)	–	6.7 (1.7)	–	0.05
Personalized stigma: mean (SD)	7.0 (1.7)	–	6.9 (1.5)	–	0.73
Disclosure: mean (SD)	5.8 (1.0)	–	5.7 (1.0)	–	0.66
Public attitudes: mean (SD)	4.9 (1.3)	–	5.1 (1.2)	–	0.09
Support through parent relations and family life: mean (SD)	24.3 (5.5)	–	23.9 (5.8)	–	0.57
Social support by peers: mean (SD)	18.0 (5.7)	–	15.1 (6.2)	–	<0.0001*

ART, antiretroviral treatment; SD, standard deviation.

\*Significance level at  $p < 0.05$ .

finding could be interpreted against the background of high rates of orphans and vulnerable children in our sample. As HIV-affected families struggle with poverty, children may be required to earn money. Working could result in more communication opportunities and subsequent disclosure, but also in reaching independence, which could include telling others about their status, be it

voluntarily or not. Alternatively, parents living with HIV may also have given examples of how to disclose.

There is evidence that disclosing one's HIV status enhances well-being and access to social support (Menon et al., 2007; Sherman et al., 2000), and most of the clinics that we recruited from proactively promoted disclosure policies. Thus, visiting the HIV clinic

Table 4. Logistic regression.

Predictor	Social disclosure vs. no social disclosure ( <i>n</i> = 568)		
	OR	95% CI	<i>p</i> -value
Gender: being male	1.08	0.676–1.736	0.739
Age	1.24	1.050–1.468	0.011*
Living in Uganda	1.25	0.748–2.094	0.392
Parents alive			0.015*
Both parents alive	1		
Father died	2.28	1.160–4.515	0.017*
Mother died	1.34	0.615–2.949	0.457
Both parents died	0.93	0.479–1.821	0.842
Contributing to family income	2.24	1.214–4.162	0.010*
Frequency of clinic visits			0.029*
Once a month or more often	1		
Once every 2–3 months	0.34	0.163–0.712	0.004*
Less often than every 3 months	0.00	0.00	0.999
Not going to HIV clinic	2.01	0.361–11.294	0.424
Self-efficacy to disclose			0.004*
High disclosure self-efficacy	1		
Medium disclosure self-efficacy	0.67	0.334–1.376	0.282
Low disclosure self-efficacy	0.21	0.084–0.569	0.002*
HIV-related stigma			
Stigma/negative self-image	0.95	0.822–1.119	0.592
Stigma/public attitudes	0.84	0.690–1.046	0.124
Social support through peers	1.05	1.017–1.101	0.005*

\*Significance level at  $p < 0.05$ .

regularly was a significant predictor for social disclosure. About 44% of ALHIV in our sample participated in peer-support groups organized by the care facilities, which provides them with effective psychosocial support and may enable them with skills for social disclosure (Bikaako-Kajura et al., 2006; Funck-Brentano et al., 2005).

In line with our hypothesis, social support was independently and positively associated with social HIV self-disclosure to peers. Perceived social support through peers was more strongly associated with social self-disclosure than support through the family environment, which is in line with the findings on the family context, as explained above. This is also corroborated by Kajubi, Bagger, Katahoire, Kyaddondo, and Whyte (2014), who found that intra-family communication patterns supported adolescents in medication use but much less in communication skills. At the interpersonal level, disclosure can create opportunities for adherence and psychosocial support from family members and peers (Mburu et al., 2014). In our study, low self-efficacy to disclose was significantly and negatively associated with the outcome variable. This can be explained by existing disclosure decision-making theories (Greene et al., 2012), and by studies highlighting the need for developing disclosure communication skills (Chenneville, Lynn, Peacock, Turner, & Marhefka, 2014). Recent studies showed that children considered accidental and deductive disclosure to be a substantial risk (Mupambireyi, Bernays, Bwakura-Dangarembizi, & Cowan, 2014). As they turn into adolescents, they clearly claim more control over if, when and to whom to disclose their HIV status (Moyer, 2012; Hogwood, Campbell, & Butler, 2013; Siu, Bakeera-Kitaka, Kennedy, Dhabangi, & Kambugu, 2012). The study by Mburu et al. (2014) for instance showed in this respect that adolescents, regardless of their age or gender, contended with limited control over disclosure circumstances, and resented the high level of control over HIV disclosure exerted by parents, guardians, and older relatives. Interventions that increase adolescents' self-efficacy may be empowering in gaining this sense of control.

Interestingly, in our sample stigma-related variables were only significantly associated with social self-disclosure in the bivariate analysis but not in the final regression model. Studies among adults have shown that perceived stigma is primarily related to involuntary disclosure (Lyimo et al. 2014). Disclosure to ALHIV led to engaging more effectively with treatment and support, which helped to deal better with HIV-related stigma (Midtbø, Shirima, Skovdal, & Daniel, 2012). Overall, in our sample perceived levels of stigma were in the middle range, and study participants evaluated reactions on disclosing events to peers as generally positive and helpful.

Contrary to our initial hypothesis, also the construct self-esteem, potentially overlapping with self-image, was not significant. Here, it should be noted that the scale's internal consistency was sub-optimal. The results may be an indication that social disclosure among ALHIV in our sample was linked to individual factors such as self-efficacy but to a greater extent to the social context and psychosocial resources.

### **Study limitations**

The following limitations should be mentioned. We recruited at selected pediatric and other health facilities as a baseline for an intervention study, which may limit the external validity of the findings. The survey was interviewer-administered, and in spite of extensive training, bias cannot be excluded. In our analysis we could not differentiate between perinatally and heterosexually HIV-infected adolescents, which potentially could have affected coping with and control over HIV disclosure.

Because this study concerns a secondary data analysis, the ways to operationalize social disclosure were limited, treating disclosure perhaps as a simplification (Dima, Stutterheim, Lyimo, & de Bruin, 2014). The quantitative assessment tools used may also present some inherent limitations, i.e., not objectively assessing behavioral outcomes; influence of cognitive and situational factors (Brenner, Billy, & Grady, 2003). Adding the findings from our qualitative formative research using focus group studies (Loos et al., 2012), which used a holistic approach, could have added valuable subjective interpretation and individual meaning to complement our quantitative findings, especially in the light of contextualizing the findings (Weinhardt, Forsyth, Carey, Jaworski, & Durant 1998).

Finally, this is a cross-sectional study, which does not allow for assessing causality between the psychosocial constructs measured and the disclosure outcome. For instance, having disclosed to someone may increase self-efficacy to disclose, mutually influencing each other.

### **Conclusion**

This study provides some evidence on the influencing factors on social HIV disclosure among a vulnerable group of ALHIV. Given the importance of socialization during the adolescent developmental transition process, our findings have relevance for clinical care and support services. While current models of HIV service delivery fall short in considering the broader needs of children and adolescents living with HIV including their HIV disclosure needs (Skovdal & Belton, 2014), interventions are needed that facilitate autonomous decision-taking about social disclosure, equipping ALHIV with skills increasing their self-efficacy to disclose and gain control



over the process. As it has been shown that family environments can be enabling in care, but much less so in communication skills (Kajubi et al., 2014), safe environments need to be constructed and integrated in regular HIV care in which ALHIV can build trustful relationships with their peers, and practice disclosure skills. ALHIV should have a voice in developing and building such locally relevant interventions (Mburu et al., 2013). Programs provided should be developmentally appropriate, considering eventual cognitive and developmental problems of children and adolescents living with HIV (Sherr, Croome, Castaneda, Bradshaw, & Romero, 2014), and delivered through appropriate and appealing channels. Role modeling and narrative approaches have been proven to be successful therapeutic tools (Willis et al. 2014), and they could similarly be used to promote decision-making about HIV self-disclosure and to increase disclosure skills. Such tools could be used in culturally tailored and structured support group programs, which generally have shown to engage HIV-positive adolescents in care and positively influence linkage to care and treatment (Snyder et al., 2014). While health-care providers will need appropriate resources to be able to integrate such programs into regular HIV care (Vujovic, Struthers, Meyersfeld, Dlamini, & Mabizela, 2014) such interventions could enable ALHIV to make optimal use of available psychosocial resources, even under constraining conditions such as disruptive family structures.

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