Community Health Workers Improve HIV Disclosure Among HIV-Affected Sexual Partners in Rural Uganda: A Quasi-Experimental Study

Zubair Lukyamuzi, Ruth Mirembe Nabisere, Rita Nakalega, Patience Atuhaire, Hajira Kataike, Bashir Ssuna, Mazen Baroudi, Flavia Matovu Kiweewa, Philippa Musoke, Lisa M. Butler

Key Findings
- Community health workers used community-based counseling, home visits, phone calls, and disclosure skills building to support adults living with HIV in the disclosure process, which led to increased disclosure.
- Having community health workers able to support the disclosure process among adults living with HIV can help expand community-based HIV care and management for those experiencing difficulties with sexual partner disclosure or barriers to accessing health facilities or trained health care workers.

Key Implications
- In addressing challenges of HIV treatment and management adherence in low-resource settings, policy makers should leverage community health worker programs to integrate HIV disclosure mechanisms for adults living with HIV in heterosexual relationships.
- In addressing HIV disclosure challenges among sexual partners, HIV care programs in low- and middle-income countries should advocate for community-based disclosure mechanisms located near populations with low attendance at health facilities.

ABSTRACT
Background: We evaluated the efficacy of a community health worker (CHW)–led intervention in supporting disclosure among adults living with HIV in heterosexual relationships.

Methods: We conducted a quasi-experimental study with 2 arms allocated by geographically determined clusters and adjusted for between-group differences among adults living with HIV in the greater Luwero region of Uganda who had never disclosed their status to their current primary sexual partners. Clusters were allocated to either a CHW-led intervention or a control arm. In both arms, participants were consecutively recruited. As opposed to receiving routine care for the control arm, participants in the intervention arm received additional CHW disclosure support. The overall follow-up was 6 months, and the primary outcome was disclosure to the sexual partner. Data were analyzed using a clustered modified Poisson regression model with robust standard errors to determine independent factors associated with disclosure.

Results: Of the 245 participants who enrolled, 230 (93.9%) completed the study, and 112 (48.7%) of those were in the intervention arm. The median age was 30 (interquartile range=25–37) years, the majority were women (76.5%), and most (80%) did not know their partners’ HIV status at study entry. At the end of follow-up, the overall disclosure prevalence was 74.4% (95% confidence interval [CI]=68.2, 79.9) and participants in the intervention arm were 51% more likely to disclose compared to those in the control (adjusted relative ratio [aRR]=1.51; 95% CI=1.28, 1.77). Men were 24% (aRR=1.24; 95% CI=1.07, 1.44) more likely to disclose compared to women, and membership in an HIV/AIDS association increased disclosure by 18% (aRR=1.18; 95% CI=1.01, 1.39).

Conclusion: CHW support improved disclosure among adults living with HIV in heterosexual relationships when compared to routine care. Therefore, CHW-led mechanisms may be utilized in increasing disclosure among adults living with HIV in heterosexual relationships in rural settings.

INTRODUCTION
HIV remains a major public health problem worldwide. Despite the world’s commitment to end HIV/AIDS by 2030, about 680,000 AIDS-related deaths and 1.5 million new infections occurred in 2020; this caused a persistent slow decline in new infections to fewer than 500,000, which was the 2020 global target. Despite contributing only 12% of the world’s population, sub-Saharan Africa bears the highest global
HIV burden, with 71% of the world’s people living with HIV (PLHIV). 5

HIV infection affects all age groups but is more prevalent among those who are sexually active or have ever been married. 5 Among sexually involved couples in Uganda, 10% are affected by HIV, and of these, only 3% are concordant positive (both partners are HIV positive). 3 In the management of HIV, disclosure is a critical challenge affecting both concordant and discordant couples. 4, 6, 7 Apart from its prevention and care benefits, 8, 9 disclosure promotes social support, retention in care, and a sense of well-being by enhancing trust and social acceptance. 10, 11 Failure to disclose is associated with poor antiretroviral therapy (ART) adherence, development of treatment-resistant strains, and increased HIV transmission. 12–14 Disclosure can be either planned or unplanned, and it should be understood as a process rather than a one-time event. 15 Many PLHIV who are willing to disclose anticipate negative reactions such as blame, abandonment, violence, and separation. However, only a few such adverse events occur following disclosure. 15, 16 Disclosure can be done by the HIV-positive person themselves or by others, such as health workers on behalf of the HIV-positive person following their consent. 17

Multiple factors influence disclosure in a sexual relationship. 18, 19 These include both barriers and the specific needs of the relationship, such as financial and social support. 17, 20, 21 Other factors influencing disclosure include: literacy, number of sexual partners, index testing at antenatal care or voluntary counseling and testing centers, being on ART, receipt of disclosure counseling, time spent in HIV care, membership in an HIV/AIDS association, perceived level of stigma and discrimination, having responsibility to disclose, presence of a disclosure opportunity, and knowing the partner’s HIV status. 8, 9, 11, 17 Relatedly, disclosure varies greatly among sexual partners, but it is generally lower with casual partners than with steady partners. The duration taken to disclose also varies widely from the time of HIV diagnosis to after many years of living with the disease. 8 Occasionally, disclosure is influenced by social desirability which is evidenced by the fact that 15.4% and 6.7% of men and women, respectively, claim to have disclosed when they actually have not. 22 This form of deception in HIV care among PLHIV may lead to persistent undesirable HIV management outcomes. 22

Despite the fundamental role of disclosure in improving HIV treatment and management outcomes, there are limited interventions to support disclosure among adults living with HIV in sexual relationships. The use of trained personnel who are qualified to offer professional health services in support of disclosure has been shown to be effective. 25 However, it’s challenging to only rely on this approach, especially in low- and middle-income countries where there is a scarcity of trained professional health cadres. Additionally, men’s attendance at health facilities in sub-Saharan Africa is still very low despite vigorous efforts to encourage and remind women to always bring their spouses for HIV-related services. 26 This has created a need for more readily available community-based interventions that are located geographically closer than health facilities to where people live.

In response to the scarcity of trained health professionals, particularly in low- and middle-income countries, the use of community health worker (CHW) programs reemerged as a desired strategy to increase access to health services. 27–29 Uganda adopted the strategy in 2001 to bridge the health service delivery gap between the community and health facilities, and most villages now have 1 CHW serving at least 5–10 households. 30 According to the country’s CHW operations guidelines, CHWs are selected by the community members themselves through a popular vote. They are trained on the job and undergo continuous refresher and update training organized by the Ministry of Health and partners. CHWs are entitled to a monthly stipend of 18000 Ugandan shillings (US$5), facilitation in terms of transport and lunch, and incentives such as certificates and T-shirts. They are responsible for conducting home visits, mobilizing communities for utilization of health services, promoting health in their communities, following up on people who have been discharged from health facilities and those on long-term treatment, and linking community members such as HIV-positive people to health services. 30

CHWs’ effectiveness and contributions to improving access to health services and achieving desirable outcomes in HIV care have been documented. 31, 32 For example, CHW-based mechanisms have improved psychosocial outcomes in PLHIV, including self-efficacy, quality of life, social support, and reduced stigma. 33 Yet despite CHWs being the most-approached health workers in the community by PLHIV, 12, 34 their specific role in supporting HIV status disclosure among adults living with HIV in sexual relationships is not clearly documented. Therefore, the main objective of this study was to evaluate the role of CHWs in supporting disclosure among adults living with HIV in heterosexual relationships in the greater Luwero district, a region.
with some of the highest rates of HIV prevalence and sexual partner nondisclosure in Uganda.35–37

METHODS

Study Design
This was a quasi-experimental study with 2 study arms allocated by clusters. Clusters were subcounties of the greater Luwero region in Uganda that had been previously determined according to the geographical boundaries. From October 3, 2019 to May 31, 2020, the study was conducted among adults living with HIV in sexual relationships who had never disclosed to their sexual partners. Participants from geographically close clusters were allocated either an intervention (CHW support) or control arm (without CHW support), and the proportion of disclosure was compared between the study arms at the end of the 6-month follow-up. Because the intervention required interaction between participants and CHWs within the community, some clusters were utilized as a geographical barrier (buffer zone) between the intervention and control clusters, and all potential participants from the buffer zone were excluded from the study (Figure 1).

Study Area and Population
The study area was the greater Luwero region, located about 20 kilometers from Kampala, the capital of Uganda, and includes 3 subdistricts: Luwero, Nakaseke, and Nakasongola districts. The region includes 25 subcounties, which served as clusters in this study. In Uganda, a subcounty is composed of about 6 parishes (each consisting of several villages or zones) with a subcounty chief in charge of technical matters (e.g., planning and mechanical or scientific work) and an elected local council III chairman. The region had a population of about 949,100,35 served by 3 government hospitals, 1 private not-for-profit hospital, and 7 health center IVs. In Uganda, a health center IV is managed by a doctor and provides minor surgical services and other general health services, and a hospital provides services for all surgeries and medical care.38,39 Therefore, the study sites were high-volume HIV care units in health facilities, namely Luwero, Nakaseke, and Kiwoko hospitals; Semuto, Nyimbwa, Kalagala, Ngoma, Nakasongola, Nabiswera, and St. Francis health center IVs. However, we were not able to work in the government military facility (one of the hospitals in the region) because it did not provide us with administrative approval until near the end of the project period. In addition to HIV care services, all study sites offered general health services.

Of the 25 clusters, 15 adjoining clusters were allocated to the intervention arm, 6 to the control, and 4 formed the buffer zone. Because of the prior administratively determined geographical sizes, clusters in the control arm were relatively bigger, and thus fewer than those in the intervention. Participants from the clusters were enrolled in the study arms in which their respective clusters had been allocated. Study participants were adults living with HIV who had been in heterosexual relationships for at least 3 months and had not disclosed their status to their current primary partner.

Data Collection Procedures
For both study arms, participants were recruited between October 3, 2019 and November 7, 2019. All adults living with HIV who came in for HIV services at the study sites during the above period were informed about the study by the study focal person at the facility. Potential participants who were interested and readily available for the study were screened, and those who met the eligibility
criteria were consented to and enrolled. The eligibility criteria were: adult (above 18 years), HIV positive irrespective of ART status, being in a heterosexual relationship for at least 3 months, having not disclosed their HIV status to their current primary sexual partner, having stayed in the study area (greater Luwero region) for at least 3 months, and willing to provide informed consent. Potential participants who were coming from the buffer zone were excluded from the study to minimize contamination. Participants were consecutively recruited by the study research assistants, who were HIV care providers (e.g., counselors) at the study sites. About 8 participants were recruited per day across all sites.

All participants completed a questionnaire at enrollment and a disclosure assessment form at 3-month and 6-month clinic visits. Participants in different study arms who were enrolled at the same study site were enrolled on different dates and given different appointment dates for subsequent visits to minimize cross-contamination at the study site. This was necessary because 2 sites (Luwero and Kiwoko hospitals) enrolled participants in both arms. Overall, Luwero hospital enrolled 48 participants (36 in the intervention arm and 12 in control) and Kiwoko hospital enrolled 33 participants (26 in the intervention arm and 7 in control). The rest of the other facilities enrolled 20 participants on average in either the intervention or control arm. All participants continued with routine HIV care, including HIV disclosure counseling, but those in the intervention arm received CHW support in addition.

The study end points were HIV disclosure or study end period (6 months), whichever came first. Those who experienced adverse events upon disclosure or during the study period were kept in the study up to the end of the follow-up, as they continued to receive reconciliation counseling (dispute resolution in case the partner was reachable), and social support from the study team and the health facility.

**CHW Intervention**

CHWs are members of their home communities and have basic training in providing basic health care services, including home visiting, health promotion and education, disease surveillance, mobilization for immunization services, follow-up with pregnant women and lactating mothers, and supporting HIV care services. For HIV services in particular, CHWs support linkage to care among those that need HIV services and provide basic HIV counseling, home-based care, health education, adherence support, and livelihood psychosocial support.

After enrollment, each participant in the intervention arm was asked to provide the name and contact information (if they were known to the participant) of a CHW in their area of residence. The details of a CHW obtained from a participant were verified in the list of CHWs from the district registry. The 3 districts in the greater Luwero region were among the 112 districts with a CHW program, and the entire region had approximately 2,000 CHWs, which was consistent with the distribution of CHWs in the country.

Verified CHWs were contacted and informed about the study and were scheduled for training. A total of 48 CHWs aged between 25 and 60 years were recruited and trained for 3 days. The training covered refresher HIV basic counseling skills; HIV status disclosure skills; health ethics; confidentiality and privacy; and management of adverse events associated with disclosure, such as domestic violence and separation. Trainings used both role play and didactic models, moderated by HIV care counselors and study investigators. Pre- and post-training assessments were completed.

In addition to the routine care, participants in the intervention arm were linked and attached to a trained CHW from their area of residence or its vicinity. One hundred and twenty-one participants were paired with 48 CHWs irrespective of gender in the ratio of 3:1. The participant and a CHW initially met and laid out a specific disclosure plan, which generally included 2 weekly phone calls and scheduled home visits. Discussions during phone calls and home visits included methods or skills to be used in disclosure, assessment of the partner’s attitude toward HIV and their personality, potential adverse outcomes and how to overcome them, and the partner’s availability and timings at home. They also practiced how to start and handle the disclosure process. Depending on the agreements from the discussions, eventual disclosure would occur at the participant’s home or at the health facility, according to the participant’s preference.

At the participant’s home, either the participant would disclose to their partner in the presence of a CHW, or, in the presence of the participant, the CHW would disclose to the participant’s partner on the participant’s behalf. If done at the health facility, a CHW would encourage and arrange for couples’ HIV testing and counseling at the health facility of the participant’s choice. During couples’ testing and counseling at
the facility, eventual disclosure would be done by the counselor on the participant’s behalf.

The CHW received ongoing supervision via regular phone calls and meetings with the study team. They completed home visit and phone call logs whenever they visited or telephoned the participant for study purposes, and they received a monthly facilitation and transport allowance of 50 000 Ugandan shillings (US$15).

**Control (Routine Care)**
Participants continued to receive standard of care at their respective HIV care centers (i.e., the study sites), which involved HIV counseling and disclosure counseling at every routine care appointment visit, antiretroviral drug refills, adherence counseling, and psychosocial support. With routine care, participants would disclose at home by themselves or persuade their partners to go to the health facility for couples’ HIV counseling and testing, where eventual disclosure would occur with the help of a health worker.

**Outcomes**
The primary outcome was HIV disclosure at the end of the study follow-up. This was assessed at 3 monthly subsequent in-clinic study visits for every participant. Participants who disclosed were encouraged to bring their partners to the study site or health facility for further counseling and possible HIV testing. Secondary outcomes were occurrence of adverse events after disclosure (e.g., separation, fighting, and quarreling), lost to follow-up, and partial or eventual disclosure (e.g., separation, tuberculosis case detection). Therefore, using the information above, we determined the expected proportion in the intervention group to be 0.78. We set power at 80% (β = 0.84), design effect of 2, and alpha at 0.05 (α = 1.96). Thus, the total estimated sample size was approximately 236.

**Statistical Analysis**
Data were collected using REDCap version 8.5.11 then transferred into an Excel spreadsheet and later to STATA version 15/MP for analysis. Univariately, data were summarized using descriptive texts and summarizing tables and graphs. Continuous variables like age were summarized as median with interquartile range while categorical variables were summarized as frequencies and proportions in tables. Cumulative disclosure prevalence was obtained by dividing the number of participants who disclosed at the end of the follow-up by the total number of participants who completed the study and multiplied by 100. Bivariate analysis was done using a clustered modified Poisson regression model with robust standard errors and this was fitted to get unadjusted relative ratios (RRs). All independent variables with a P value of <.2 at bivariate and those known to influence disclosure from the literature were entered into a multivariate clustered modified Poisson model to determine the independent factors associated with disclosure. Interaction and confounding were also assessed before fitting the final model. Confounding was determined if there was a >10% change in the adjusted and unadjusted RRs. Interaction was assessed only on significant variables at bivariate level.

**Sample Size and Sampling Procedures**
We estimated the sample size using a Fleiss formula for 2 proportions (Box).

Considering the baseline disclosure of 54%, we assumed a disclosure increase of 46% by the intervention based on a previous study in which CHWs improved tuberculosis sputum positive case detection. Therefore, using the information above, we determined the expected proportion in the intervention group to be 0.78. We set power at 80% (β = 0.84), design effect of 2, and alpha at 0.05 (α = 1.96). Thus, the total estimated sample size was approximately 236.

**BOX. Equation for Estimating Sample Size**

\[ N = \left[ z_a \sqrt{P(1-P)(1/q_1 + 1/q_2)} + z_\beta \sqrt{P_1(1-P_1)(1/q_1) + P_2(1-P_2)(1/q_2)} \right]^2 \]

\[ \div (P_1 - P_2)^2 \]

where \( p_1 \) was assumed to be the proportion of control arm participants expected to disclose at the end of the study, \( p_2 \) was the assumed proportion of intervention arm disclosure, \( q_1 \) was the assumed proportion of non-disclosure in the control arm, and \( q_2 \) was the assumed proportion of non-disclosure in the intervention arm. \( p = q_1 p_1 + q_2 p_2 \), and \( N \) was the total number of participants.
Ethical Approval
The protocol was reviewed and approved by the School of Medicine Institutional Review Board - Makerere University (REC REF 2019-100). Additional clearance was sought from the Uganda National Council for Science and Technology (HS443ES). The district health departments granted permission to undertake the study. All participants gave their informed written consent. Confidentiality and anonymity were strictly observed at all the research stages. All CHWs who were contacted and agreed to participate were trained on health ethics, confidentiality, and handling of adverse outcomes of disclosure. Additionally, we also obtained informed consent from the CHWs to participate in the study. Participant safety was ensured throughout the study. Participants who experienced adverse outcomes, such as quarreling and separation, were reconciled to the best of the team’s ability before their termination in the study. Partner HIV testing and referral to HIV care (for newly positive partners) were done upon their approval. All methods were done in accordance with relevant guidelines and regulations of good clinical practice and human subject protection.

RESULTS
A total of 245 participants were enrolled from 10 health facilities, with an average of 25 participants per facility. Two facilities enrolled participants in both study arms, and the rest enrolled in either the intervention or control arm. A total of 230 (93.9%) participants completed the study, and of these, 112 (48.7%) were in the intervention arm and 118 (51.3%) were in the control (Figure 2). The median age was 30 (interquartile range=25–37) years. The majority of those enrolled were women (76.5%) (Table 1).

Participant Clinical and Behavioral Characteristics
The majority of the participants (184, 80%) didn’t know their partners’ HIV status. Among sexual partners whose HIV status was known by participants, 38 (82.6%) were known as negative. A total of 144 participants (62.6%) had been on ART for at least a year. Overall, 191 participants (83.0%) had disclosed to either a friend or relative, and 39 (17.0%) had never disclosed to anyone. Only 13 participants (5.7%) were members of an HIV support group or association (e.g., as peer educators). Most participants (182, 79.1%) had received partner disclosure counseling from a health worker at their respective HIV care centers. The majority of the participants (120, 52.2%) reported having a negative attitude toward other people knowing their HIV-positive status (Table 2).
Factors Associated With HIV Disclosure
Participants in the intervention arm were 51% more likely to disclose compared to those in control (adjusted relative ratio [aRR]=1.51; \(P<.001\)). Male gender and membership in an HIV/AIDS support group increased disclosure by 24% (aRR=1.24; \(P=.004\)) and 18% (aRR=1.18; \(P=.044\)), respectively. However, prior receipt of disclosure counseling and having a negative attitude toward self-HIV-positive status reduced disclosure by 30% (aRR=0.69; \(P=.001\)) and 21% (aRR=0.79; \(P=.001\)), respectively (Table 3).

Disclosure Prevalence and Adverse Events Following Disclosure
A total of 171 participants disclosed their HIV status to their partners, giving a disclosure prevalence of 74.4% (95% confidence interval [CI]=68.2, 79.9). Of 171 participants, 99 were from the intervention arm (43.0%; 95% CI=36.6, 49.7).
| Characteristic                        | Sample Size, No. (%) (N=230) | Intervention, No. (%) (n=112) | Control, No. (%) (n=118) | P Value |
|--------------------------------------|------------------------------|--------------------------------|--------------------------|---------|
| Partner HIV status                   |                              |                                |                          | .049    |
| Negative                             | 38 (16.5)                    | 12 (10.7)                      | 26 (22.0)                |         |
| Positive                             | 8 (3.5)                      | 3 (2.7)                        | 5 (4.2)                  |         |
| Do not know                          | 184 (80.0)                   | 97 (86.6)                      | 87 (73.7)                |         |
| Duration on ART                       |                              |                                |                          | .001    |
| <6 months                            | 55 (23.9)                    | 38 (33.9)                      | 17 (14.4)                |         |
| 6 months–1 year                      | 31 (13.5)                    | 10 (8.9)                       | 21 (17.8)                |         |
| >1 year                              | 144 (62.6)                   | 64 (57.1)                      | 80 (67.8)                |         |
| Condom use                           |                              |                                |                          | .191    |
| No                                   | 130 (56.5)                   | 68 (60.7)                      | 62 (52.5)                |         |
| Sometimes                            | 83 (36.1)                    | 39 (34.8)                      | 44 (37.3)                |         |
| Always                               | 17 (7.4)                     | 5 (4.5)                        | 12 (10.2)                |         |
| Person disclosed to before study entry|                              |                                |                          | .050    |
| None                                 | 39 (17.0)                    | 24 (21.4)                      | 15 (12.3)                |         |
| Friend                               | 21 (9.1)                     | 6 (5.4)                        | 15 (12.7)                |         |
| Relative                             | 170 (73.9)                   | 82 (73.2)                      | 88 (74.6)                |         |
| Place of HIV diagnosis               |                              |                                |                          | 0.033   |
| ANC clinic                           | 59 (25.7)                    | 32 (28.6)                      | 27 (22.9)                |         |
| VCT clinic                           | 149 (64.8)                   | 75 (67.0)                      | 74 (62.7)                |         |
| Other                                | 22 (9.6)                     | 5 (4.5)                        | 17 (14.4)                |         |
| Membership in HIV/AIDS association   |                              |                                |                          | 0.127   |
| No                                   | 217 (94.3)                   | 103 (92.0)                     | 114 (96.6)               |         |
| Yes                                  | 13 (5.7)                     | 9 (8.0)                        | 4 (3.4)                  |         |
| Prior receipt of disclosure counseling|                              |                                |                          | .004    |
| No                                   | 48 (20.9)                    | 27 (24.1)                      | 21 (17.8)                |         |
| Always                               | 37 (16.1)                    | 8 (7.1)                        | 29 (24.6)                |         |
| Only at testing                      | 75 (32.6)                    | 42 (37.5)                      | 33 (28.0)                |         |
| Sometimes                            | 70 (30.4)                    | 35 (31.3)                      | 35 (29.7)                |         |
| Negative attitude toward other people getting to know one’s HIV status | | | | .005 |
| No                                   | 110 (47.8)                   | 43 (38.4)                      | 67 (56.8)                |         |
| Yes                                  | 120 (52.2)                   | 69 (61.6)                      | 51 (43.2)                |         |
| Feeling responsibility to disclose   |                              |                                |                          | .140    |
| No                                   | 22 (9.6)                     | 14 (12.5)                      | 8 (6.8)                  |         |
| Yes                                  | 208 (90.4)                   | 98 (87.5)                      | 110 (93.2)               |         |
and 72 from the control (31.3%; 95% CI=25.4, 37.7). The disclosure fraction attributed to the intervention was 0.31 (95% CI=0.19, 0.41; P <0.001) (Figure 3).

Among the partners who were disclosed to, 104 (60.8%) came to the study site for HIV counseling and possible testing; of these, 55 (52.9%) tested negative, 23 (22.1%) confessed to be HIV positive and already in HIV care, and 26 (25%) newly tested positive (were linked to HIV care).

Of those that disclosed, 12 (12.1%) and 9 (12.5%) participants in the intervention and control arms, respectively, experienced adverse events. In the intervention group, adverse events included separation (5, 5.1%), quarrelling or abuse (4, 4.0%), and threatening (3, 3.0%). In the control group, adverse events included separation (1, 1.4%), quarrelling or abuse (4, 5.6%), and threatening (4, 5.6%) (Table 4).

## DISCUSSION

Our CHW intervention increased HIV disclosure by 51% with an attributable disclosure fraction of 31.0%. This provides empirical evidence that CHWs could have a substantial role in supporting disclosure among adults living with HIV in heterosexual relationships with disclosure difficulties. Men were 24% more likely to disclose compared to women, and membership in HIV/AIDS associations increased disclosure by 18%. However, having a negative attitude toward self-HIV-positive status and prior receipt of disclosure counseling reduced disclosure by 21% and 30%, respectively.

Through continuous community-based counseling, home visits, phone calls, and disclosure skills building, CHWs encouraged and supported adults living with HIV in the disclosure process and, hence, increased HIV disclosure. In Uganda, CHWs had specific roles and responsibilities, but supporting disclosure was not specifically documented. In addition to their already well-known support for HIV care services, CHWs have consistently offered support in various HIV care contexts. In Malawi, CHWs significantly improved the continuum of care in the prevention of mother-to-child transmission of HIV. In South Africa, they improved viral load suppression among PLHIV, and in sub-Saharan Africa at large, they improved quality of life for PLHIV. Although CHWs have not had a positive influence on HIV treatment outcomes in some settings, they have generally improved the delivery of health services, especially in rural settings. Therefore, our findings strengthen the importance of CHWs in improving health care services, particularly in HIV care.

HIV disclosure, particularly among sexual partners, is vital in HIV management because of its prevention and care benefits, such as improving ART adherence and retention in care and reducing HIV transmission. It also promotes social support and enhances trust and social acceptance. The community-based counseling approaches used by CHWs reduce HIV stigma and discrimination, which aids HIV disclosure. Therefore, having CHWs able and willing to support disclosure is a breakthrough in expanding community-based HIV care and management for PLHIV experiencing disclosure difficulties and hardships accessing health facilities or professional health care workers. Since CHWs already have documented responsibilities, adding a disclosure support task may require HIV care programs to train CHWs on HIV disclosure requirements. Although motivation and facilitation are among the key priorities in CHW strategy and operational guidelines, particularly in Uganda, CHWs always report hardships in executing their work and inadequate motivation and facilitation. Therefore, since disclosure is a process that requires time, patience, and commitment, there is a need to revive motivation and facilitation for CHWs, especially when adopting new tasks for them.

Men were more likely to disclose compared to women; this was similar to the findings in previous...
Due to their financial independence and gender power to have higher self-efficacy and positive outcome expectancies compared to women, men are less likely to fear financial support implications, gender-based violence, or adverse events that may follow disclosure. However, many studies found that women were more likely to disclose than men, while others found no gender differences in HIV disclosure. These differences may be due to variations in the study setting, design, and population. However, for the current study, continuous community-based counseling and encouragement of men by CHWs may have influenced and motivated disclosure.

| Characteristic | No. (%) (N=230) | Crude RR (95% CI) | Adjusted* RR (95% CI) | P Value |
|----------------|-----------------|-------------------|----------------------|---------|
| Study arm      |                 |                   |                      |         |
| Control        | 118 (51.3)      | 1.00              | 1.00                 |         |
| Intervention   | 112 (48.7)      | 1.45 (1.24, 1.70) | 1.51 (1.28, 1.77)    | <.001   |
| Gender         |                 |                   |                      |         |
| Female         | 176 (76.5)      | 1.00              | 1.00                 |         |
| Male           | 54 (23.5)       | 0.96 (0.81, 1.14) | 1.24 (1.07, 1.44)    | .004    |
| Prior receipt of disclosure counseling | |                   |                      |         |
| No             | 48 (20.9)       | 1.00              | 1.00                 |         |
| Always         | 37 (16.1)       | 0.82 (0.63, 1.07) | 0.80 (0.61, 1.03)    | .082    |
| Only at testing| 75 (32.6)       | 1.05 (0.91, 1.20) | 1.06 (0.92, 1.22)    | .438    |
| Sometimes      | 70 (30.4)       | 0.68 (0.54, 0.86) | 0.70 (0.56, 0.87)    | .001    |
| Negative attitude toward other people getting to know one’s HIV status | |                   |                      |         |
| No             | 110 (47.8)      | 1.00              | 1.00                 |         |
| Yes            | 120 (52.2)      | 0.76 (0.66, 0.89) | 0.79 (0.69, 0.91)    | .001    |
| Ever had chance(s) to disclose | |                   |                      |         |
| No             | 166 (72.2)      | 1.00              | 1.00                 |         |
| Yes            | 64 (27.8)       | 1.16 (0.99, 1.37) | 1.14 (0.97, 1.34)    | .118    |
| Membership in HIV/AIDS association | |                   |                      |         |
| No             | 217 (94.3)      | 1.00              | 1.00                 |         |
| Yes            | 13 (5.7)        | 1.17 (0.99, 1.37) | 1.18 (1.01, 1.39)    | .044    |
| Person disclosed to before study entry | |                   |                      |         |
| None           | 39 (17.0)       | 1.00              | 1.00                 |         |
| Friend         | 21 (9.1)        | 0.71 (0.49, 1.03) | 0.74 (0.50, 1.12)    | .155    |
| Relative       | 170 (73.9)      | 0.85 (0.74, 0.97) | 0.91 (0.77, 1.07)    | .249    |
| Duration of relationship | |                   |                      |         |
| <6 months      | 14 (6.1)        | 1.00              | 1.00                 |         |
| 6 months–1 year| 57 (24.8)       | 0.94 (0.76, 1.17) | 1.04 (0.84, 1.27)    | .741    |
| >1 year        | 159 (69.1)      | 0.89 (0.77, 1.04) | 0.97 (0.79, 1.18)    | .755    |

Abbreviation: CI, confidence interval; RR, relative ratio.
*Adjusted for: age, gender, prior receipt of disclosure counseling, membership to HIV/AIDS association, fear of stigma, ever had chance(s) of disclosure, negative attitude toward other people getting to knowing one’s HIV status, and person disclosed to prior to the study entry.
among men. Because men rarely receive adequate HIV disclosure counseling due to their low attendance at health facilities, the CHW mechanism may have reached them adequately in the community.

Participation in an HIV/AIDS association or group (e.g., as a peer educator) increased the chances of disclosure, a finding consistent with previous studies. Such groups create a sense of duty in an individual to inform others about one’s HIV status due to the occasional receipt of information regarding prevention of HIV transmission and adherence to HIV care services. Also, being leaders in some contexts, peer educators are meant to be exemplary to others; hence, they feel more responsibility to disclose compared to other PLHIV. In contrast, a multicenter study done in Burkina Faso, Kenya, Malawi, and Uganda showed that HIV support groups were negatively associated with HIV disclosure. This difference could have been due to the differences in study design, as that study was cross-sectional as opposed to the current longitudinal interventional study.

Having a negative attitude toward other people knowing one’s HIV status reduced the chances of disclosure. This is probably linked to HIV-related stigma, as the negative effect of stigma on disclosure has already been reported. In addition to stigma, fear of the negative consequences of disclosure in a sexual relationship might have been responsible for the negative attitude some participants exhibited toward other people knowing their HIV status, as also reported elsewhere. However, several cross-sectional studies reported perceived stigma as a non-significant factor for HIV status disclosure. The cross-sectional nature of these studies might be responsible for the contradiction with the current interventional study.

Despite reports that receipt of disclosure counseling is associated with disclosure, participants who had received disclosure counseling before study entry were less likely to disclose. This could have been because these participants may have made disclosure attempts before the study and noticed the possible negative consequences, which they never wanted to elicit again.

It was remarkable that 22.1% of the partners who were disclosed to and discovered to be HIV positive were already in HIV care. This is similar to reports from previous studies that concordant positive sexual partners may not be aware of each

TABLE 4. Adverse Events Following Disclosure Among Adults Living With HIV in Heterosexual Relationships in Rural Uganda

| Adverse Events     | Intervention, No. (%) | Control, No. (%) | P Value |
|--------------------|-----------------------|------------------|---------|
| Total              | 12 (12.1)             | 9 (12.5)         | .941    |
| Separations        | 5 (5.1)               | 1 (1.4)          | .199    |
| Quarreling/abuse   | 4 (4.0)               | 4 (5.6)          | .411    |
| Threatening        | 3 (3.0)               | 4 (5.6)          | .643    |

Having a negative attitude toward other people knowing one’s HIV status reduced the chances of disclosure.
The findings in the current study reaffirm the fact that negative outcomes may occur following disclosure, but the risks are much smaller in the long term and are worth undertaking.

Study Strengths and Limitations

To the best of our knowledge, this is the first study to scientifically evaluate the role of CHWs in supporting HIV disclosure among adults living with HIV in heterosexual relationships. We reduced the social desirability bias associated with HIV disclosure15 by confirming self-reported disclosures with CHWs in the intervention arm and encouraging those who disclosed to bring their partners to the study site or HIV care center for additional counseling and testing. Fortunately, 60.8% of the sexual partners who were disclosed to came to the study site (health facility) for further counseling and HIV testing.

The findings of this study should be interpreted with caution because this was a nonrandomized cluster study, which was prone to selection bias or confounding. However, confounding was assessed during statistical analysis and no confounder was identified; hence, there was minimal possibility of this occurrence. Because of the community nature of the intervention, the study was prone to cross-contamination from the possibility of sharing intervention information between the participants of the 2 study arms. However, we created a buffer zone between the clusters in the intervention arm and those in the control arm, which minimized the possibility of participants from different study arms meeting while in the community. To minimize contamination at the study sites during in-clinic study visits, participants in the intervention group at the sites that recruited in both arms were given different appointment dates for enrollment and follow-up, which reduced their chances of meeting at the study sites. Finally, there was a variation in participants’ baseline characteristics between study arms, which was probably due to the nonrandomized nature of the study clusters. This limitation was minimized by controlling the presumed independent variables in the modified cluster multivariate regression analysis.

CONCLUSION

The CHW-led mechanism increased HIV disclosure among adults living with HIV in heterosexual relationships in rural Uganda. CHWs can play a fundamental role in supporting disclosure among adults living with HIV with disclosure difficulties in a rural community setting. Further studies assessing and evaluating the operational feasibility and sustainability of this approach may be required.

Acknowledgments: The authors would like to thank Mr. Mawanda Denis (study coordinator) and the research assistants for collecting the data, the participants and community health workers for taking part, and finally, the district authorities for granting us permission to undertake the study.

Funding: This project was supported by NIH Research Training Grant # D43 TW009340 funded by the NIH Fogarty International Center, NCI, NIEHS, NINDS, NIMH, and NHLBI.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Data availability: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author contributions: ZL conceptualized the study. RNW and ZL participated in data collection and its management and drafted the manuscript. BS conducted the analysis. PM and MB supported and guided conceptualization, data collection and management, and manuscript writing. HK supported data management. RK and PA contributed to the conceptualization of the study. MB participated in manuscript writing. FMK provided overall technical guidance for the conceptualization process. All authors reviewed the manuscript and provided substantial input, and all approved the final manuscript.

Competing interests: None declared.

REFERENCES

1. Katz I, Jha AK. HIV in the United States: getting to zero transmissions by 2030. JAMA. 2019;321(12):1153–1154. CrossRef. Medline
2. Gleeson HS, Oliveras Rodriguez CA, Hatone L, Hart D. Ending AIDS by 2030: the importance of an interlinked approach and meaningful youth leadership. J Int AIDS Soc. 2018;21(Suppl 1):e25061. CrossRef. Medline
3. Joint United Nations Programme on HIV/AIDS (UNAIDS). Seizing the Moment: Tackling Entrenched Inequalities to End Epidemics. UNAIDS, 2020. Accessed August 29, 2022. https://www.unaids.org/sites/default/files/media_asset/2020_global-aids-report_en.pdf
4. Joint United Nations Programme on HIV/AIDS (UNAIDS). Confronting Inequalities: Lessons for Effective Responses From 40 Years of AIDS. UNAIDS; 2021. Accessed August 29, 2022. https://unaidstest.unaids.org/sites/default/files/media_asset/2021-global-aids-update_en.pdf

5. Government of Uganda. Ministry of Health (MOH), ICF International, Uganda Centers for Disease Control and Prevention, U.S. Agency for International Development, WHO Uganda. Uganda AIDS Indicator Survey 2011. MOH/ICF International; 2012. Accessed August 29, 2022. https://dhsprogram.com/pubs/pdf/AIS10/AIS10.pdf

6. Guthrie BL, de Bruyn G, Farquhar C. HIV-1 discordant couples in sub-Saharan Africa: explanations and implications for high rates of discordancy. Curr HIV Res. 2007;5(4):416–429. CrossRef. Medline

7. Lingappa JR, Lambdin D, Bukusi EA, et al. Regional differences in prevalence of HIV-1 discordance in Africa and enrollment of HIV-1 discordant couples into an HIV-1 prevention trial. PLoS One. 2008;3(1):e1411. CrossRef. Medline

8. Obermeyer CM, Baijal P, Pegurri E. Facilitating HIV disclosure across diverse settings: a review. Am J Public Health. 2011;101(6):1011–1023. CrossRef. Medline

9. Converse PJ, Mariam DH, Msuya SE. Predictors of HIV serostatus disclosure to sexual partners. AIDS Behav. 2015;19(4):625–634. CrossRef. Medline

10. Smith R, Rossetto K, Peterson BL. A meta-analysis of disclosure of one's HIV-positive status, stigma and social support. AIDS Care. 2008;20(10):1266–1275. CrossRef. Medline

11. Serovich JM, Massack KE. Reasons for HIV disclosure or nondisclosure to casual sexual partners. AIDS Educ Prev. 2003;15(1):70–80. CrossRef. Medline

12. Ruzagira E, Wandiembe S, Abaasa A, et al. HIV incidence and risk concordance and discordance among sexual partners receiving voluntary counseling and testing in Uganda. PLoS One. 2012;7(2):e34037. CrossRef. Medline

13. Kangwende RA, Chirenda J, Mudyiradima RF. HIV status disclosure to casual sexual partners. Br J Soc Psychol. 2001;40(Pt 4):471–499. CrossRef. Medline

14. Haberer JE, Kahane J, Kigazi I, et al. Real-time adherence monitoring for HIV antiretroviral therapy. AIDS Behav. 2010;14(6):1340–1346. CrossRef. Medline

15. Achilla T. Disclosure of HIV Status to Sexual Partners Amongst People Who Receive Antiretroviral Treatment in Kampala, Uganda: Master’s thesis. University of the Western Cape; 2010. Accessed August 29, 2022. http://etd.uwc.ac.za/xmlui/bitstream/handle/11394/2814/Achilla_MPH_2010.pdf

16. Armitage CJ, Conner M. Efficacy of the theory of planned behaviour: a meta-analytic review. Br J Soc Psychol. 2001;40(Pt 4):471–499. CrossRef. Medline

17. He H, Xu P, Xin Q, et al. Study on spousal notification in HIV discordant couples and associated factors in four provinces of China. Article in Chinese. Zhonghua Liu Xing Bing Xue Za Zhi. 2015;36(6):565–568. Medline

18. Kiula ES, Damian DJ, Msuya SE. Predictors of HIV serostatus disclosure to partners among HIV-positive pregnant women in Morogoro, Tanzania. BMC Public Health. 2013;13:433. CrossRef. Medline

19. Kangwende RA, Chirenda J, Mudyiradima RF. HIV status disclosure among people living with HIV/AIDS at FASO, Mutare, Zimbabwe. Curr Afr J Med. 2009;55(1–4):1–7. CrossRef. Medline

20. Marks G, Richardson JL, Maldonado N. Self-disclosure of HIV infection to sexual partners. Am J Public Health. 1991;81(10):1321–1322. CrossRef. Medline

21. Wyzowski P, Rosiek A, Grzelka T, Lekowski K. Occupational HIV risk for health care workers: risk factor and the risk of infection in the course of professional activities. Ther Clin Risk Manag. 2016;12:989–994. CrossRef. Medline

22. Anglewicz P, Chintaanya J. Disclosure of HIV status between spouses in rural Malawi. AIDS Care. 2011;23(8):998–1005. CrossRef. Medline

23. Chemaitelly H, Shelton JD, Hallett TB, Abu-Raddad LJ. Only a fraction of new HIV infections occur within identifiable stable discordant couples in sub-Saharan Africa. AIDS. 2013;27(2):251–260. CrossRef. Medline

24. Kinuthia J, Singa B, McGrath CJ, et al. Prevalence and correlates of non-disclosure of maternal HIV status to male partners: a national survey in Kenya. BMC Public Health. 2018;18:671. CrossRef. Medline

25. Kairania R, Gray RH, Kiwanuka N, Makumbi F, Sewankambo NK, Serwadda D, et al. Disclosure of HIV results among discordant couples in Rakai, Uganda: a facilitated couple counselling approach. AIDS Care. 2010;22(9):1041–1051. CrossRef. Medline

26. Byamugisha R, Äström AN, Ndegezi G, Karamagi CA, Tylleskär T, Tumwino JK. Male partner antenatal attendance and HIV testing in eastern Uganda: a randomized facility-based intervention trial. J Int AIDS Soc. 2011;14(1):43. CrossRef. Medline

27. Haines A, Sanders D, Lehmann U, et al. Achieving child survival goals: potential contribution of community health workers. Lancet. 2007;369(9579):2121–2131. CrossRef. Medline

28. Schneider H, Hlaphe H, von Rensburg D. Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects. Health Policy Plan. 2008;23(3):179–187. CrossRef. Medline

29. Swider SM. Outcome effectiveness of community health workers: an integrative literature review. Public Health Nurs. 2002;19(1):11–20. CrossRef. Medline

30. Government of Uganda. Ministry of Health (MOH), National Village Health Teams (VHTs) Assessment in Uganda. MOH; 2015. Accessed August 30, 2022. http://library.health.go.ug/publications/health-education/national-village-health-teams/vht-assessment-uganda

31. Rosenhal FL, de Heer H, Rush CH, Holderby LR. Focus on the future: a community health worker research agenda by and for the field. Prog Community Health Partnersh. 2008;2(3):183–235. CrossRef. Medline

32. Mwai GW, Mburu G, Torpey K, Frost P, Ford N, Seeley J. Role and outcomes of community health workers in HIV care in sub-Saharan Africa: a systematic review. J Int AIDS Soc. 2013;16(1):1856. CrossRef. Medline

33. Han HR, Kim K, Murphy J, et al. Community health worker interventions to promote psychosocial outcomes among people living with HIV—A systematic review. PLoS One. 2018;13(4):e0194928. CrossRef. Medline

34. Celletti F, Wright A, Palen J, et al. Can the deployment of community health workers help health workers for the delivery of HIV services represent an effective and sustainable response to health workforce shortages? Results of a multicountry study. AIDS. 2010;24(Suppl 1):S45–S57. CrossRef. Medline

35. Aturinde A, Farnagh M, Pilesjö P, Mansoorian A. Spatial analysis of HIV-TB co-clustering in Uganda. BMC Infect Dis. 2019;19(1):612. CrossRef. Medline

36. Ngonzi J, Muggenyi G, Kivunike M, et al. Frequency of HIV status disclosure, associated factors and outcomes among HIV positive pregnant women at Mbarara Regional Referral Hospital, southwestern Uganda. Pan Afr Med J. 2019;32:200. CrossRef. Medline

37. King R, Katundo D, Lifshay J, et al. Processes and outcomes of HIV serostatus disclosure to sexual partners among people living with HIV in Uganda. AIDS Behav. 2008;12(2):232–243. CrossRef. Medline
Global Health: Science and Practice 2022 | Volume 10 | Number 5

38. Uganda Bureau of Statistics (UBOS). The National Population and Housing Census 2012 – Main Report. UBOS; 2016. Accessed August 30, 2022. https://www.ubos.org/wp-content/uploads/publications/03_20162014_National_Census_Main_Report.pdf

39. Uganda Bureau of Statistics (UBOS), ICF, Uganda Demographic and Health Survey 2016: Key Indicators Report. UBOS/ICF; 2017. Accessed August 30, 2022. https://www.ubos.org/wp-content/uploads/publications/03_2016AUG2014_KIRS.pdf

40. Semmelmann M, Boar S, Goenooze A, et al. Community-supported models of care for people on HIV treatment in sub-Saharan Africa. Trap Med Int Health. 2014;19(8):968–977. CrossRef Medline

41. Fleiss JL, Levin B, Paik MC. Statistical Methods for Rates and Proportions. 3rd ed. John Wiley & Sons; 2003.

42. Suli SN, Atubame L, Tumwine C, et al. Reasons for disclosure of HIV status by people living with HIV/AIDS and in HIV care in Uganda: an exploratory study. AIDS Patient Care STDs. 2010; 24(10):675–681. CrossRef Medline

43. Garg S, Nanda P, Dewangan M. Role of community health workers in improving TB detection on scale: a case study from the Mitanin programme in Chhattisgarh, India. BMJ Global Health. 2016; 1(Suppl 1):A16–A17. CrossRef

44. Statia. Version 15. StatCorp; 2017. Accessed August 30, 2022. https://www.statia.com/

45. Kim MH, Ahmed S, Buck WC, et al. The Tingathe programme: a pilot intervention using community health workers to create a continuum of care in the prevention of mother to child transmission of HIV (PMTCT) cascade of services in Malawi. J Int AIDS Soc. 2012;15(Suppl 2): 17389. CrossRef Medline

46. Igumeru JO, Scheepers E, Ebrahim R, Jason A, Grimwood A. An evaluation of the impact of a community-based adherence support programme on ART outcomes in selected government HIV treatment sites in South Africa. AIDS Care. 2011;23(2):231–236. CrossRef Medline

47. Kipp W, Konde-Lule J, Saunders LD, et al. Antiretroviral treatment for HIV-positive status disclosure to sexual partners among individuals receiving HIV care in Addis Ababa, Ethiopia. PLoS One. 2019;14(4):e0211967. CrossRef Medline

48. Shifraz MB, Shifraz MT, Miliku HZ, Ayalew AF. HIV-positive status disclosure to sexual partner and associated factors among adult HIV-positive patients in Debre Markos Town, 2019. HIV AIDS (Auckl). 2021;13:571–579. CrossRef Medline

49. Bukenyi ID, Ogpinia D, Ikuka PO, Harry TC, Inatimi O, Chukwuere OU. Prevalence pattern and determinants of disclosure of HIV status in an anti retroviral therapy clinic in the Niger Delta region of Nigeria. Afr J Infect Dis. 2014;8(2):27–30. CrossRef Medline

50. Semple SJ, Patterson TL, Shaw WS, Pedlow CT, Grant I. Disclosure of HIV seropositivity to sexual partners: an application of social cognitive theory. Behav Ther. 1999;30(2):223–237. CrossRef

51. Brown MJ, Serovich JM, Laschober TC, Kimberly JA, Lescano CM. Ways of coping and HIV disclosure among people living with HIV: mediation of decision self-efficacy and moderation by sex. AIDS Care. 2019;31(8):1001–1010. CrossRef Medline

52. Wohl AR, Galvan FH, Myers HF, et al. Do social support, stress, disclosure and stigma influence retention in HIV care for Latino and African American men who have sex with men and women? AIDS Behav. 2011;15(6):1098–1110. CrossRef Medline

53. Olley BO, Seedat S, Stein DJ. Self-disclosure of HIV serostatus in recently diagnosed patients with HIV in South Africa. Afr J Reprod Health. 2004;8(2):71–76. CrossRef Medline

54. Erku TA, Megabiaw B, Wubshet M. Predictors of HIV status disclosure to sexual partners among people living with HIV/AIDS in Ethiopia. Pan Afr Med J. 2012;13:87. CrossRef Medline

55. Kuule Y, Dobson AE, Waldeyrahymes D, et al. Community health volunteers in primary healthcare in rural Uganda: factors influencing performance. Front Public Health. 2017;5:62. CrossRef Medline

56. Mutumba M, Musimire V, Tsai AC, et al. Disclosure of HIV status to perinatally infected adolescents in urban Uganda: a qualitative study on timing, process, and outcomes. J Assoc Nurses AIDS Care. 2015;26(4):472–484. CrossRef Medline

57. Bhatia DS, Harrison AD, Kubeka M, et al. The role of relationship dynamics and gender inequalities as barriers to HIV-serostatus disclosure: qualitative study among women and men living with HIV in Durban, South Africa. Front Public Health. 2017;5:188. CrossRef Medline

58. Strachan DL, Källander K, Nakirunda M, et al. Using theory and formative research to design interventions to improve community health worker motivation, retention and performance in Mozambique and Uganda. Hum Resour Health. 2015;13:25. CrossRef Medline

59. Desalegn NG, Hailemichael RG, Shewa-amare A, et al. HIV disclosure: HIV-positive status disclosure to sexual partners among individuals receiving HIV care in Addis Ababa, Ethiopia. PLoS One. 2019;14(2):e0211967. CrossRef Medline

60. Friel SE, Mbita M, Mbita P. HIV disclosure: sex and marital status among adults living with HIV in Kenya. Afr J AIDS Res. 2010;9(1):248–255. Medline

61. Kalichman SC, Nachimson D. Self-efficacy and disclosure of HIV-positive serostatus to sex partners. Health Psychol. 1999;18(3):281–287. CrossRef Medline

62. Dawson-Rose C, Gutin SA, Mudender F, Hunguana E, Kevany S. Disclosure of HIV status by people living with HIV/AIDS and in HIV care in selected government HIV treatment sites in South Africa. Afr J AIDS Res. 2010;9(1):248–255. Medline

63. Kull P, Fielder N, O'Sullivan B, et al. Disclosure of HIV status to sexual partners: a qualitative study in South Africa. Health Psychol. 2009;28(1):111–117. CrossRef Medline

64. Bhatia DS, Harrison AD, Kubeka M, et al. The role of relationship dynamics and gender inequalities as barriers to HIV-serostatus disclosure: qualitative study among women and men living with HIV in Durban, South Africa. Front Public Health. 2017;5:188. CrossRef Medline

65. Harsen AT, Van Griensven V, Dejongh M, et al. Disclosure to nonprimary sex partners among HIV-positive people in South Africa, Malawi and Nigeria: a cross-sectional study. Med Care. 2013;51(4):364–370. CrossRef Medline

66. Erku TA, Megabiaw B, Wubshet M. Predictors of HIV status disclosure to sexual partner and associated factors among adult HIV-positive patients in Debre Markos Town, 2019. HIV AIDS (Auckl). 2021;13:571–579. CrossRef Medline

67. Bukenyi ID, Ogpinia D, Ikuka PO, Harry TC, Inatimi O, Chukwuere OU. Prevalence pattern and determinants of disclosure of HIV status in an anti retroviral therapy clinic in the Niger Delta region of Nigeria. Afr J Infect Dis. 2014;8(2):27–30. CrossRef Medline

68. Semple SJ, Patterson TL, Shaw WS, Pedlow CT, Grant I. Disclosure of HIV seropositivity to sexual partners: an application of social cognitive theory. Behav Ther. 1999;30(2):223–237. CrossRef

69. Brown MJ, Serovich JM, Laschober TC, Kimberly JA, Lescano CM. Ways of coping and HIV disclosure among people living with HIV: mediation of decision self-efficacy and moderation by sex. AIDS Care. 2019;31(8):1001–1010. CrossRef Medline

70. Wohl AR, Galvan FH, Myers HF, et al. Do social support, stress, disclosure and stigma influence retention in HIV care for Latino and African American men who have sex with men and women? AIDS Behav. 2011;15(6):1098–1110. CrossRef Medline

71. Olley BO, Seedat S, Stein DJ. Self-disclosure of HIV serostatus in recently diagnosed patients with HIV in South Africa. Afr J Reprod Health. 2004;8(2):71–76. CrossRef Medline

72. Erku TA, Megabiaw B, Wubshet M. Predictors of HIV status disclosure to sexual partners among people living with HIV/AIDS in Ethiopia. Pan Afr Med J. 2012;13:87. CrossRef Medline

73. Deribe K, Woldehawerih K, Nsiau B, Yakob B. Gender difference in HIV status disclosure among HIV positive service users. East Afr J Public Health. 2009;6(3):248–255. Medline

74. Kalichman SC, Nachimson D. Self-efficacy and disclosure of HIV-positive serostatus to sex partners. Health Psychol. 1999;18(3):281–287. CrossRef Medline

75. Dawson-Rose C, Gutin SA, Mudender F, Hunguana E, Kevany S. Effects of a peer educator program for HIV status disclosure and health system strengthening: findings from a clinic-based disclosure support program in Mozambique. PLoS One. 2020;15(5):e0232347. CrossRef Medline

76. Gillett HU, Parr J. Disclosure among HIV-positive women: the role of HIV/AIDS support groups in rural Kenya. Afr J AIDS Res. 2010;9(4):337–344. CrossRef Medline

77. Harsen AT, Van Griensven V, Dejongh M, et al. Disclosure to nonprimary sex partners among HIV-positive people in South Africa, Malawi and Nigeria: a cross-sectional study. Med Care. 2013;51(4):364–370. CrossRef Medline

78. Harsen AT, Van Griensven V, Dejongh M, et al. Disclosure to nonprimary sex partners among HIV-positive people in South Africa, Malawi and Nigeria: a cross-sectional study. Med Care. 2013;51(4):364–370. CrossRef Medline
72. Saw K. HIV disclosure in polygamous settings in Senegal. Article in French. SAHARA J. 2013;10(Suppl 1):S28–S36. CrossRef. Medline

73. Issiaka S, Cartoux M, Ky-Zerbo O, et al. Living with HIV: women’s experience in Burkina Faso, West Africa. AIDS Care. 2001;13(1):123–128. CrossRef. Medline

74. Vu L, Andrinopoulos K, Mathews C, Chapra M, Kendall C, Eisele TP. Disclosure of HIV status to sex partners among HIV-infected men and women in Cape Town, South Africa. AIDS Behav. 2012;16(1):132–138. CrossRef. Medline

75. Kalichman SC, Simbayi L. Traditional beliefs about the cause of AIDS and AIDS-related stigma in South Africa. AIDS Care. 2004;16(5):572–580. CrossRef. Medline

76. Bond V, Chase E, Aggleton P. Stigma, HIV/AIDS and prevention of mother-to-child transmission in Zambia. Eval Program Plann. 2002;25(4):347–356. CrossRef

77. Obiri-Yeboah D, Amaako-Sakyi D, Baidoo I, Adu-Oppong A, Rheinländer T. The ‘fears’ of disclosing HIV status to sexual partners: a mixed methods study in a counseling setting in Ghana. AIDS Behav. 2016;20(1):126–136. CrossRef. Medline

78. Kadowa I, Nuwaha F. Factors influencing disclosure of HIV positive status in Mityana district of Uganda. Afr Health Sci. 2009;9(1):26–33. Medline

79. Batte A, Katahoire AR, Chimoyi A, Ajambo S, Tibingana B, Banura A. Changes in sexual desires and behaviours of people living with HIV after initiation of ART: implications for HIV prevention and health promotion. BMC Public Health. 2011;11:633. CrossRef. Medline

80. Geary C, Parker W, Rogers S, et al. Gender differences in HIV disclosure, stigma, and perceptions of health. AIDS Care. 2014;26(11):1419–1425. CrossRef. Medline

81. Wamoyi J, Mbonye M, Seeley J, Birungi J, Jaffar S. Changes in sexual desires and behaviours of people living with HIV after initiation of ART. implications for HIV prevention and health promotion. BMC Public Health. 2011;11:633. CrossRef. Medline

82. Senrau K, Kuhn L, Vwalika C, et al. Women in couples antenatal HIV counselling and testing are not more likely to report adverse social events. AIDS. 2005;19(6):603–609. CrossRef. Medline

83. Ambissa M, Senda EG, Assefa Y, Guta A. HIV-positive status disclosure to a sexual partner and associated factors among HIV-positive pregnant women attending antenatal care in Dire Dawa, Ethiopia: a cross-sectional study. PLoS One. 2021;16(4):e0250637. CrossRef. Medline

84. Seid M, Wasie B, Admassu M. Disclosure of HIV positive result to a sexual partner among adult clinical service users in Kembisee district, northeast Ethiopia. Afr J Reprod Health. 2012;16(1):97–104. Medline

85. Naigino R, Makumbi F, Mukose A, et al. HIV status disclosure and associated outcomes among pregnant women enrolled in antiretroviral therapy in Uganda: a mixed methods study. Reprod Health. 2017;14(1):107. CrossRef. Medline

86. Grinstead OA, Gregorich SE, Choi K-H, Coates T. Positive and negative life events after counseling and testing: the Voluntary HIV-1 Counselling and Testing Efficacy Study. AIDS. 2001;15(8):1045–1052. CrossRef. Medline

87. Yanah G, Fredrick F, Leyna G. HIV serostatus disclosure among people living with HIV/AIDS in Mwanza, Tanzania. AIDS Res Ther. 2014;11(1):S. CrossRef. Medline

88. Okorah OT, Alapa OM, Okunlola JO, Okorar TA. Management of conflicts arising from disclosure of HIV status among married women in southwest Nigeria. Health Care Women Int. 2015;36(2):149–160. CrossRef. Medline

89. Sadoh WE, Sadoh AE. Experiences of HIV positive mothers who chose not to breastfeed their babies in Nigeria. Afr J Reprod Health. 2009;13(1):27–35. Medline

90. Atuyambe LM, Ssegujuja E, Ssali S, et al. HIV/AIDS status disclosure increases support, behavioural change and, HIV prevention in the long term: a case for an urban clinic, Kampala, Uganda. BMC Health Serv Res. 2014;14:276. CrossRef. Medline

Peer Reviewed

Received: September 10, 2021; Accepted: August 23, 2022; First published online: September 22, 2022.

Cite this article as: Lukyamuzi Z, Nabiserere RM, Nakalega R, et al. Community health workers improve HIV disclosure among HIV-affected sexual partners in rural Uganda: a quasi-experimental study. Glob Health Sci Pract. 2022;10(5):e2100631. https://doi.org/10.9745/GHSP-D-21-00631

© Lukyamuzi et al. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are properly cited. To view a copy of the license, visit https://creativecommons.org/licenses/by/4.0/. When linking to this article, please use the following permanent link: https://doi.org/10.9745/GHSP-D-21-00631