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Comparative exploration of patient related factors that influence adherence to ART among HIV patients attending Jinja regional referral Hospital.

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ABSTRACT

Adherence to antiretroviral therapy among HIV-infected patients contributes to better treatment outcomes and is also important in reducing the development of drug resistance. It also enhances the patient's quality of life and allows them to live longer and healthier lives. The objective of the study was to determine level of adherence as well as patient factors influencing adherence to antiretroviral therapy among HIV infected patients attending Jinja Regional Referral Hospital, Jinja district. A cross sectional study was conducted Jinja Regional Referral Hospital among HIV infected patients aged 15 years and above who attended ART Clinic. Systematic sampling method was employed to obtain a total of 206 patients. Face to face interviews were conducted using structured questionnaires. Data was processed using SPSS software version 25, and Chi-square statistic used to test for association. This study had 206 participants in total, with 58.7% (121) of them being female. The participants' mean age (SD) was 37.59 ± 10.7 years. In the multivariate analysis, primary-level participants had 66% lower chances of reporting poor ART adherence compared to participants with secondary education. Despite participants' extensive understanding of ART, there was limited adherence to treatment in the sample of the current study. Participants with poor adherence to ART were those who had not told their sexual partner or families about their HIV sero-status. Additionally, patients who claimed to have gone through stigmatizing incidents were less likely to stick with ART. Therefore, adherence counseling and education should be provided to all patients before initiation of antiretroviral therapy in order to enhance adherence to Antiretroviral Therapy. Interventions to reduce stigma to people living with HIV/AIDS are of importance in increasing adherence to antiretroviral therapy, both at community level and among people living with HIV/AIDS.
Keywords: Exploration, related factors, ART, HIV patients and Jinja

INTRODUCTION

With over 35 million deaths to date, the human immunodeficiency virus (HIV) infection is one of the deadliest epidemics the world has ever seen. World Health Organization (WHO) African Region is the most afflicted region, with 25.7 million people living with HIV in 2017. In 2017, there were 940 000 deaths worldwide due to HIV-related causes, and there were roughly 36.9 million individuals living with the virus by the end of the year [1]. The African region also accounts for over two thirds of the global total of new HIV infections. Uganda has made tremendous progress in combating the HIV and AIDS epidemic with a decline in the prevalence from 18% in the early 1980s to the current 6.0% according to the Uganda HIV and AIDS country progress report 2017 [2]. Globally, 21.7 million

HIV-positive people were getting antiretroviral medication (ART) in 2017. Between 2000 and 2017, this rise in ART coverage resulted in a 36% decrease in new HIV infections, a 38% decrease in HIV-related mortality, and a saving of 11.4 million lives thanks to ART [3]. HIV is progressively turning into a chronic, controllable condition with the advent of ART [4]. However, for a treatment to be successful, individuals must adhere to their treatment for the rest of their lives and clinics must have a steady supply of ART [5]. According to [6], non-adherence is the most frequent cause of treatment failure, with a potential for drug resistance due to insufficient viral suppression. The demand for second-line therapy rises as a result of subsequent transmission of first-line ART-resistant HIV strains, which is frequently accompanied by worse patient outcomes and rising healthcare costs [7]. Because of these factors, it is crucial to have a complete grasp of what influences ART compliance [8]. Studies on ART adherence have revealed that predictors and risk variables vary by geographical location [9], prompting the construction of non-adherence profiles that are context-specific. This will make it possible for medical professionals to provide patients who are at risk of non-adherence with care that is specifically customized to their needs. Long distances to medical facilities, the availability and affordability of ARVs, the cost of food and transportation, the quality of life during ARV treatment, the length of wait times at medical facilities, and the congestion at the medical facilities are all factors that contribute to non-adherence in the African context [10]. Implementing programmatic ways can assist address some of these issues, but due to the settings' constrained resource availability, such efforts might not have the expected results [11]. In the past, a number of programs have been launched to increase adherence. These included ART supply chain management training, HIV prevention training, clinical care training, counseling, community support programs, and the utilization of experienced ART patients (expert clients) who support other patients who are just starting treatment [12]. Maintaining proper ART treatment adherence over time is still a challenge, especially in settings with minimal resources, such sub-Saharan African nations [13].

In Uganda, the absence of organized appointment processes plagues many health facilities that provide ART therapy. Overcrowding has been linked to this issue, particularly when patients arrive early in the hopes of being the first to obtain medical care. The resulting congestion that arises at such healthcare facilities eventually has a negative impact on the quality of services and patients' satisfaction with the healthcare service [9]. ART adherence and influencing factors in the Jinja district and Jinja Regional Referral Hospital (JRRH) is not known. A study in Kamuli health center IV indicated that; forgetting treatment was the most cited factor [14]. Other factors included, feeling better after some medication period, being too ill to take medication, stigma associated with taking ART medication, alcohol consumption and drug stock out [14]. However, it is known if these factors are the same for JRRH. Therefore, this study seeks to explore the patient factors that influence adherence to ART among HIV-positive patients at Jinja Regional Referral Hospital.

Problem statement

Just behind South Africa and Nigeria on the list of nations with a high prevalence of HIV, Uganda is rated third [5]. According to estimates from the Uganda Ministry of Health, the country's HIV prevalence was 6.0% by the end of 2017. [2]. Uganda presently follows a recent WHO recommendation that states all patients who test HIV positive must begin antiretroviral therapy (ART) regardless of their CD4 count [15]. However, individuals with HIV must follow their prescribed regimens in order for the many treatment medications for viral suppression in HIV to work effectively. There is a significant probability of unsuccessful viral suppression with HIV therapy regimens using an un boosted protease inhibitor when treatment adherence is less than 95%. [16]. High levels of HIV treatment adherence have been demonstrated to be associated with better viral suppression results, while low levels of adherence have been linked to worse viral suppression, drug resistance, and lower survival [17]. Studies on ART adherence in Uganda and elsewhere have revealed that while there are regional differences in the factors that affect adherence to ART, social and economic factors and patient characteristics are the most frequently reported. But these came from places with diverse social and economic backgrounds. As a result, this study investigated the patient-specific characteristics that affect ART adherence.

Geographical scope

The study was conducted at Jinja Regional Referral Hospital. The hospital is located at latitude 0o25'51"N and longitude 33o12'17"E, in the Central division of Jinja municipality, Jinja district in Eastern region, Uganda. It is approximately 82 kilometers from the country's capital, Kampala.

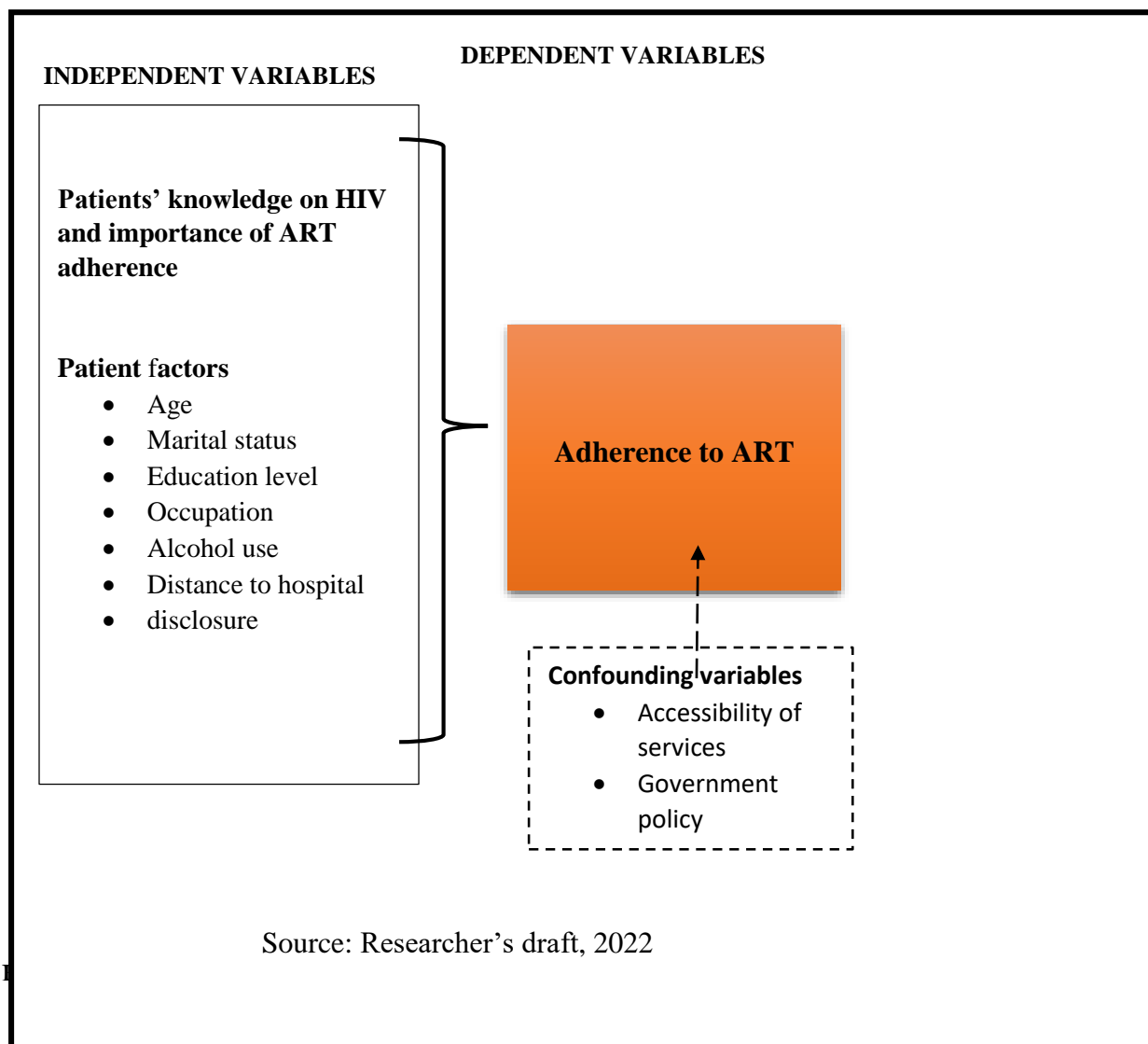### Justification of the study

The creation of an interactive feedback mechanism through ongoing adherence monitoring and the correlation of findings with clinical outcomes may result in improved clinical states and patient quality of life. If used properly, ART prevents early death and AIDS progression, enhancing the quality of life for those living with HIV/AIDS. ART is another method for minimizing HIV transmission, particularly mother-to-child transmission (MTC). All of the efforts, though, are useless if they are not followed through with. For instance, it is projected that 28,000

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Ugandans passed away from AIDS-related illnesses in 2016. The likelihood of deaths from AIDS-related illnesses declining is increased adherence to ART. If the factors affecting HIV-positive individuals are unknown, it will be impossible to increase their adherence to ART. In order to identify the variables that affect patients' adherence to ART in the study context, it was crucial to conduct this study. The findings of this study helped to increase knowledge and understanding of ART non-adherence and were helpful in creating more effective therapies that will be used to address ART adherence. Results will also assist health planners, such as the district and the Ministry of Health in Uganda, in developing better, more targeted, and socially sensitive intervention programs to address sociocultural issues brought on by non-adherence.

Conceptual framework for factors influencing adherence to ART

DEPENDENT VARIABLES

INDEPENDENT VARIABLES

Patients' knowledge on HIV and importance of ART adherence

Patient factors
- Age
- Marital status
- Education level
- Occupation
- Alcohol use
- Distance to hospital
- disclosure

Adherence to ART

Confounding variables
- Accessibility of services
- Government policy

Source: Researcher's draft, 2022

METHODOLOGY
Study Design
A descriptive cross-sectional study design was used.

Study Site
The study was conducted at Jinja Regional Referral Hospital. The hospital is located at latitude 0o25'51"N and longitude 33o12'17"E, in the Central division of Jinja municipality, Jinja district in Eastern region, Uganda. It is approximately 82 kilometers from the country's capital, Kampala.

Study Population

The study's target population was all the adult (≥18 years) patients attending ART Clinic at Jinja Regional Referral Hospital.

Inclusion criteria

- HIV/AIDS patients who have been started on ART for more than 6 months.
- HIV patients 18 years and above and on ART treatment at Jinja Regional Referral Hospital.
- Patients who consented to be involved in the study.

Exclusion criteria

- Patients below 18 years
- Patients on ART for less than 6 months

Sample size determination

The sample size was calculated using the following formula by Kish Leslie [18].

$$N = \frac{Z^2 \; p(1-p)}{\delta^2}$$

Where,

N = estimated sample size

P = assumed true number of clients adhering to ARVs (results from KIUTH by [14]. found adherence at 58.8% at KIUTH.

Z = standard normal variation ant 95% confidence (1.96)

δ = margin of error (5%)

The calculated sample size was, $\frac{1.96^2 \; x \; 0.588(1-0.588)}{0.05^2} = 206$

Sampling technique

Simple random sampling was used to select study participants from a sampling frame (patients' register) which contained names of the HIV patients on ARV's attending the clinic. They were randomly selected to give equal chance of participation of each number in the register. Patients attending ART clinic were systematically selected where every other 3rd client who consented was interviewed after selecting the first client. In a case where the selected patient declined to be interviewed, the next number was interviewed. This provided a representative sample of the HIV patients in Jinja Regional Referral Hospital because all patients had equal chances of being selected for the study.

Data Collection methods

A researcher administered questionnaire was used. The questionnaire was pretested from KIU-TH and findings were used to adjust the questions. The questionnaire consisted of structured and semi structured questions to collect quantitative. The interview included items on socio-demographic data, treatment and a section on the patient factors that could have influenced the patients' adherence to ART.

Data Analysis and presentation

Data was sorted, coded, and processed using SPSS software version 25. Descriptive statistics such as mean, frequencies and percentages were used to describe and summarize the data. Analysis of contingency tables was done and Chi-square statistic used to test for association between variables.

Ethical Considerations

Ethical approval to conduct the study was sought from the dean faculty of clinical medicine and dentistry of Kampala International University-Western Campus. Permission to conduct the research at the ART clinic was obtained from the hospital director and in-charge of the ART clinic. Consent was sought from each patient both verbally and in writing before any interview was conducted. Confidentiality was maintained on all the data that was collected.

Study Limitations

The findings of this study should be interpreted in view of some limitations. This study was conducted among participants who were attending ART clinic at Jinja Regional Referral Hospital in Jinja district who were on ART for at least 6 months. Therefore, the sample may not be representative of the whole country. Since the study was of cross-sectional design, the variation of adherence of the participants to ART that can occur over time may not have been captured.

STUDY RESULTS

Demographic characteristics of the research participants (HIV patients attending Jinja Regional Referral Hospital)

This study had 206 participants in total, with 58.7% (121) of them being female (Table 1). The participants' mean age (SD) was 37.59 ± 10.7 years. The age group between 26 and 35 years made up more than one third of all participants (36.7%), followed by that between 36 and 45 years (30.1%), and that between 46 and 55 years (18.0%). Nearly half of all participants (48.1%) reported being married, followed by widowed (19.9%), divorced (13.6%), and cohabiting (12.6%). The majority of participants had only received a primary education, 65.5% (135), followed by secondary and higher education, 23.3% (48), while the remainder did not attend school. Christians made up 68% of the participants, or seven out of ten.

Table 1: Demographic characteristics of the research participants (HIV patients attending Jinja Regional Referral Hospital) (N = 206).

Variables		Frequency % (n)
Sex	Male	41.3 (85)
	Female	58.7 (121)
Age (in years)	15-25	9.2 (19)
	26-35	36.9 (76)
	36-45	30.1 (62)
	46-55	18.0 (37)
	≥ 56	5.8 (12)
Education level	No formal education	11.2 (23)
	Primary education	65.5 (135)
	Secondary and higher	23.3 (48)
Occupation	Peasant	36.9 (76)
	Employed	22.3 (46)
	Business	40.8 (84)
Marital status	Married	48.1 (99)
	Single	5.8 (12)
	Divorced	13.6 (28)
	Widow	19.9 (41)
	Cohabiting	12.6 (26)
Religion	Christian	68.0 (140)
	Muslim	24.8 (51)
	No religion	7.2 (15)
Current alcohol use	Yes	8.3 (17)
	No	91.7 (189)
Stigma	Yes	47.9 (97)
	No	52.9 (109)

Distance from the clinic (Most convenient transport)	Less than 1 hour	84 (173)
	More than 1 hour	16 (33)

Factors associated with ART adherence

The bivariate analysis shown in Table 3 of the variables related with adherence to ART revealed that marital status, level of education, stigma, and disclosure of HIV status were substantially linked with adherence to ART and qualified for multivariate analysis. In the multivariate analysis, primary-level participants had 66% lower chances of reporting poor ART adherence compared to secondary participants, and this difference was statistically significant [Adj OR 0.44 (95% CI 0.22-0.91)]. The bivariate analysis shown in Table 3 of the variables related with adherence to ART revealed that marital status, level of education, stigma, and disclosure of HIV status were substantially linked with adherence to ART and qualified for multivariate analysis. In the multivariate analysis, primary-level participants had 66% lower chances of reporting poor ART adherence compared to participants with secondary education, and this difference was statistically significant [Adj OR 0.44 (95% CI 0.22-0.91)].

Table 3: Factors associated with ART adherence among HIV patients attending Jinja Regional Referral Hospital (n = 206).

		Good % (n)	Poor % (n)	Crude OR (95% CI)	Adjusted OR[1]
Sex	Male	54.1 (46)	45.9 (39)	1.05 (0.60-1.83)	
	Female	55.4 (67)	44.6 (54)	1	
Age (years)	15-25	21.1 (4)	78.9 (15)	3.75 (0.77-18.2)	
	26-35	53.9 (41)	46.1 (35)	0.85 (0.25-2.88)	
	36-45	61.3 (38)	38.7 (24)	0.63 (0.18-2.18)	
	46-55	64.9 (24)	35.1 (13)	0.54 (0.14-2.02)	
	≥ 56	50 (6)	50 (6)	1	
Religion	Christians	57.9 (81)	42.1 (59)	0.48 (0.16-1.43)	
	Muslims	51 (26)	49 (25)	0.64 (0.19-2.06)	
	No religion	40 (6)	60 (9)	1	
Marital status	Married	54.5 (54)	45.5 (45)	1.33 (0.55-3.22)	1.42 (0.56-3.55)
	Single	50 (6)	50 (6)	1.60 (0.40-6.36)	1.70 (0.41-7.07)
	Divorced	32.1 (9)	67.9 (19)	3.37 (1.10-10.3)	2.75 (0.85-8.84)
	Widow	68.3 (28)	31.7 (13)	0.74 (0.26-2.07)	0.31 (0.28-2.65)
	Cohabiting	61.5 (16)	38.5 (10)	1	-
Level of Education	No formal education	43.5 (10)	56.5 (13)	0.78 (0.28-2.14)	1.00 (0.35-2.87)
	Primary	63.0 (85)	37.0 (50)	0.35 (0.17-0.69)	0.44 (0.22-0.91)
	Secondary and higher	37.5 (18)	62.5 (30)	1	-
Occupation	Peasant	57.9 (44)	42.1 (32)	0.88 (0.47-1.64)	
	Employed	51.1 (23)	48.9 (22)	1.15 (0.56-2.39)	

	Businessman/woman	54.8 (46)	45.2 (38)	1	
Stigma	Yes	42.3 (41)	57.7 (56)	2.65 (1.51-4.67)	2.16 (1.17-4.01)
	No	66.1 (72)	33.9 (37)	1	
Alcohol use	Yes	47.1 (8)	52.9 (9)	1.40 (0.52-3.80)	
	No	55.6 (105)	44.4 (84)	1	
Disclosure of HIV status	No	42.3 (41)	57.7 (56)	2.65 (1.51-4.67)	2.16 (1.17-4.01)
	Yes	66.1 (72)	33.9 (37)	1	-
Average knowledge	Poor	50.0 (2)	50.0 (2)	1.22 (0.16-8.83)	
	Good	55.0 (111)	45.0 (91)	-	

DISCUSSION
Factors associated with ART adherence

The current study evaluated the variables affecting ART adherence among JRRH individuals. Undoubtedly, formal education is crucial for comprehending and disseminating information about health care. The majority of participants in the current study had only received their primary education, according to our findings. A total of 89% (183) of the participants had less than a high school education, which is a combination of 65.5% (135) and 23.3% (48) who were illiterate (did not attend school). Results indicate that people in this study with secondary education or above had poorer ART adherence than those with primary education. Younger participants (those under 25) had a higher likelihood of reporting poor adherence. Educated people may show better adherence to ART due to their ability to follow the instructions related to the treatment given by the health providers. Bello proposed that education could invariably enhance adherence [19], which is in support of a study conducted by Gupta, et al. in India whereby 56% of the educated participants said that HIV could probably be controlled by ART [20]. Other literatures support that ART adherence rate was higher among participants who had a high level of formal education [21, 22]. Our findings are inconsistent with that reported by Kalichman in United States of America, who had earlier identified low educational status as a major factor of poor adherence to ART [23]. Lower education was found to be associated with obstacles to accessing ART and other HIV-related medical treatment. There have been other studies from African contexts where the amount of education has negatively impacted adherence that have been previously reported [21, 23]. Similar to what has been found in the current study, participants in this study who had secondary education or above showed lower ART adherence than those who had only received primary school. Participants with higher levels of education are more likely to hold a job, and their time at work is negatively impacted by regular medication usage. Particularly affected by this is the regularity with which medications need to be updated, and occasionally, medications are forgotten at home. Even in this study, we found that employed people were more likely to adhere to ART poorly than people working for themselves, but this difference was not statistically significant due to the smaller number of participants in this group. To help people with chronic illnesses like HIV/AIDS stick to their treatment, there should be occupational policies available in this regard. These policies should be friendly and supportive to clients to allow them follow their pre-planned treatment schedules and allow them to timely visit health facilities for refill of ART. We also found that participants who were younger (≤ 25-years-old) were more likely to report poor adherence however the difference was not significant due to lower number of participants in the category. Likewise young age has been associated with poor adherence in other studies in Tanzania [24, 25]. The finding that younger people were less likely to adhere poorly to ART use was possibly related to younger people having less stable social and economic situations and having less experience interacting with health care system than their older counterparts [22, 23]. Lastly, participants who did not tell their partners or family about their HIV sero-status had poor adherence to ART. HIV sero-status disclosure is a well-known predictor of increased adherence to ART, according to a number of studies. In fact, telling your spouse you have HIV could be the first step in developing a supportive connection with them and your family, which would make ART acceptance and maintenance easier. Researchers in Ibadan, Nigeria [26] and Shanghai [27] found that participants who were reluctant to declare their HIV infection status were more likely to have poor adherence to antiretroviral therapy (ART). The results of this study have important implication in the current program of Care

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and Treatment for HIV infected clients of reinforcing the role of treatment supporters [28-32]. Treatment supporters are individuals who are close to the client and who knows the status of the client after being disclose to them [30-35]. They have important role of following the client's adherence to ART. Clients who fail to disclose their status lack treatment supporters, resulting to low adherence rates. Stigma plays an important role in influencing disclosure of HIV status. In the present study, clients who reported to have experienced stigma events were less likely to disclose their HIV status.

CONCLUSION AND RECOMMENDATIONS

Despite participants' extensive understanding of ART, there was limited adherence to treatment in the sample of the current study. Participants with poor adherence to ART were those who had not told their sexual partner or families about their HIV sero-status. Additionally, patients who claimed to have gone through stigmatizing incidents were less likely to stick with ART.

RECOMMENDATIONS

1. All patients should receive adherence education and counseling prior to the start of ART in order to improve adherence to ART.
2. Strategies to promote clients' disclosure of their HIV status to treatment advocates, who then encourage clients to adhere to ART, are advised.
3. Interventions to lessen stigma are crucial for promoting adherence to ART, both among those with HIV/AIDS and in the community. This may include having ART treatment support groups composed of people living with HIV to support each other through joint sharing of experiences in overcoming challenges of ART adherence. Individuals who have overcome stigma and with experience in ART adherence, alternatively called expert patients, may be motivated to share with other clients their success stories in adhering to ART and spark energy among those challenged in adhering to ART.
4. We've seen that people who were educated and more likely to be in a job had a lower adherence rate to ART. We advise further investigation into the impact that a workplace setting may have on ART use. However, other elements linked to poor adherence, such as limited disclosure and stigma, may be present at work and have a negative impact on employees living with HIV/AIDS who are taking ART. It is advised that work-related HIV/AIDS policies be operationalized or strengthened in order to foster an atmosphere that is supportive of persons who are HIV-positive.

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