INOSR APPLIED SCIENCES 12(1):69-82, 2024 ISSN: 2705-165X
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International Network Organization for Scientific Research
https://doi.org/10.59298/INOSRAS/2024/12.1.69821

Assessment of Factors Associated with Adherence to Antiretroviral Therapy among HIV Patients at Kampala International University Teaching Hospital in Ishaka, Uganda

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ABSTRACT

HIV has increasingly become a chronic, manageable disease due to the introduction of antiretroviral therapies (ARTs). For the effectiveness of antiretroviral therapy, a high level of adherence is required. This study therefore seeks to assess the adherence level and the influence of its determinants in HIV patients on antiretroviral therapy at the Kampala International University Teaching Hospital (KIUTH) HIV clinic in Ishaka, Uganda. A quantitative cross-section study approach was conducted to assess the factors associated with adherence to a-ntiretroviral therapy among HIV patients at KIUTH in Ishaka, Uganda. Data was collected using an interviewer-administered questionnaire in 150 respondents in this study. The qualitative data collected was statistically analysed and documented using Microsoft Excel and Word version 2019, which were then analyzed. The analysed data was presented in the form of tables and graphs, which formed the basis for discussion and conclusion. Of a total of 150 clients interviewed, equal proportions of 26% were in the age groups of 40–49 and 50–59 years, with a mean age of 46 years. The majority (65%) were female, with most (45%) being Anglicans, followed by Catholics (32%), Muslims (14%), and other religions (9%). Nearly half (45.1%) of the respondents were married. About 7% had tertiary education, while 37% had completed the ordinary level of high school. Nearly half (47%) knew the name of the ART they were taking, while 17% did not. Less than a third (26.7%) did not know the name of the ART drug they were taking. A large proportion (93%) stated that ART prevents mother-to-child transmission of infection, while 7% reported that they did not know. Nearly all (96%) respondents knew HIV could be controlled by ART. The majority (87%) stated that taking ART prevents disease progression, and 63% opined that missing ART drugs can lead to transmission of the disease. Overall, adherence to ART was 39% while non-adherence was 61%. In conclusion, the study discovered a high degree of awareness but a low level of adherence to ART among patients living with HIV. Forgetfulness, financial level, employment status, and knowledge of the benefits of the intervention are all important factors in nonadherence among some HIV patients. As a result, ART clinics should increase the level of education provided to customers to encourage patients to take complete responsibility for their health status.

Keywords: Adherence, Antiretroviral Therapy, HIV, AIDS

INTRODUCTION

In 2002, approximately 36.7 million people around the world were living with HIV. Of these, 52% lived in sub-Saharan Africa [1]. The prevalence among individuals aged 15–49 presently stands at 5.9%. Nearly 50% of the Uganda's HIV/AIDS cases are aged 10–24 years [2]. Even though the spread of HIV/AIDS in the country has decreased, there is still a great challenge in managing the disease among approximately one million HIV-positive individuals. HIV has increasingly become a chronic, manageable disease due to the introduction of antiretroviral therapies (ARTs) [3, 4]. According to UNAIDS [5], the number of people receiving antiretroviral therapy worldwide increased from 6.4 million in 2009 to 25.4 million in 2019, and by the end of June 2020, 26 million people had accessed antiretroviral therapy. Efforts have been directed towards increasing the supply of antiretroviral therapy (ART) for HIV-positive individuals; approximately 46% of HIV-positive patients in need of medication receive free ART in Uganda [6]. However, studies have reported that even when ART is provided to patients free of

charge, there is a possibility that they may fail to adhere to the medication due to socio-economic limitations such as lack of access to food and transportation costs to clinics [7]. This is a very big challenge since the survival of patients and the control of the emergence of drug-resistant strains of HIV depend on adherence to ART. For the effectiveness of antiretroviral therapy, a high level of adherence is required [8]. A study that examined adherence in sub-Saharan Africa reported that the main reason for non-adherence was financial constraints [9]. Highly active antiretroviral therapy (HAART) has been a breakthrough in the treatment of patients with HIV. HAART reduces viral load and increases CD_4 lymphocyte counts in patients infected with HIV, achieving improved treatment outcomes [10, 11]. Studies have determined several determinants of non-adherence to ART at the individual level, including poverty, lack of food, inadequate psychological support, pill burden, side-effects of drugs, and forgetfulness, as well as at the institutional level, such as healthcare costs, lack of information about treatment, inadequate counselling, long distance to treatment, lack of patient follow-up, and overburdened facilities [12, 13]. Moreover, cultural-level factors, including stigma and discrimination, also tend to negatively impact adherence levels [14]. Other studies suggest that interventions addressing lack of access to food, forgetfulness, and being away from medication at the dose's time would be the most effective in enhancing adherence in patients receiving free ART. As free ART programmes expand in sub-Saharan Africa, interventions to ensure adherence are a growing necessity [9]. However, no study has been done to determine the adherence level and the influence of its determinants on antiretroviral therapy at the Kampala International University Teaching Hospital (KIUTH) HIV clinic. This study therefore seeks to assess the adherence level and the influence of its determinants in HIV patients on antiretroviral therapy at the Kampala International University Teaching Hospital (KIUTH) HIV clinic in Ishaka, Uganda. Information from this study could facilitate the development, evaluation, and implementation of targeted interventions to optimise ART. This study will help policymakers, stakeholders, and researchers collaborate and design interventions to improve ART among HIV patients across the country.

METHODOLOGY

Study design

A quantitative cross-section study approach was conducted to assess the factors associated with adherence to antiretroviral therapy among HIV patients at Kampala International University Teaching Hospital in Ishaka, Uganda.

Area of Study

The study was conducted at Kampala International University in Ishaka town, Bushenyi-Ishaka municipality, in Bushenyi district. Ishaka is located in Igara County, in Bushenyi District, approximately 62 kilometres, by road, west of Mbarara, the largest city in the sub-region. This is about 6 kilometers, west of Bushenyi, the location of the district headquarters. The coordinates of Ishaka are 0°32'42.0"S, 30°08'18.0" E (Latitude: -0.545006; Longitude:30.138343). Together with the neighbouring town of Bushenyi, it forms the Bushenyi-Ishaka Metropolitan Area. It is the largest metropolis in the district. In 2014, the national population census put the population of Bushenyi, including Ishaka, at 41,063.

Study population

The study was conducted among HIV patients at Kampala International University Teaching Hospital in Ishaka, Uganda.

Inclusion criteria

It included all HIV patients at Kampala International University Teaching Hospital in Ishaka, Uganda, that were available at the time of collecting data and willing to participate in the study.

Exclusion criteria

Those who declined to participate in the study.

Sample size determination

The sample size was determined using Kish Leslie's formula [15], as shown below:

$$n = \frac{(Za/2)^2 p(1-p)}{e^2}$$

Where 'n' is the desired minimum sample size, Z is the value at $\alpha = 0.05$, which is 1.96, e is the margin of error, which is proposed to be 0.1, and p is the prevalence of adherence to HAART among HIV patients at Kampala International University Teaching Hospital in Ishaka, Uganda. Until this study was conducted, there was no published data about p. So a 50% proportion was used to get the minimum sample size by taking into account the 90% confidence interval ($Z\alpha/2=1.96$) and the marginal error (d) of 10%. In line with the above consideration, the minimum calculated sample size was 96 respondents. The researcher was, however, able to interview 150 respondents in this study.

Sampling Procedure

A simple random sampling technique was used to choose respondents to participate in the study, from whom data was collected.

Dependent variables

Adherence to antiretroviral therapy among HIV patients

Independent variable

The independent variables include knowledge and attitudes.

Data collection method and tools

Data was collected using an interviewer-administered questionnaire. The researcher met with the targeted respondents who took part in the study after obtaining permission for data collection from the respondents. Each participant was required to give informed consent before enrolling in the study. The researcher assisted the respondents in filling out the questionnaires by explaining to them for clarification. The properly filled questionnaires were then collected, and data was taken for analysis.

Data entry and cleaning

The data in the questionnaire was checked for completeness, cleaned, and sorted to eliminate obvious inaccuracies and omissions. The data was then coded and entered into a computer.

Data Analysis

The qualitative data collected was statistically analysed and documented using Microsoft Excel and Word version 2019, which were then analyzed. The analysed data was presented in the form of tables and graphs, which formed the basis for discussion and conclusion.

Quality Control

To ensure quality control, the researcher conducted a pre-test using 8 questionnaires in the target population, and data was collected before the actual study to help in the reconstruction of the questionnaire where necessary.

Ethical Considerations

Participants were given information regarding the research to seek consent. Each participant's choice to participate or not was respected, and the data collected from participants was kept confidential.

RESULTS

Table 1: Demographic characteristics of respondents

Variable	Frequency	Percentage
Age (years)		
< 30	11	8
30-39	37	25
40-49	39	26
50-59	39	26
60+	23	15
Gender		
Male	53	35
Female	98	65
Religion		
Anglicans	68	45
Catholic	48	32
Muslims	21	14
Other	14	9
Marital status		
Single	39	26
Married	68	45
Divorced	21	14
Widowed/Cohabiting	22	15
Level of education		
No formal education	35	24
Primary	31	21
Ordinary level	55	37
Advanced level	18	12

Tertiary	10	7
Employment status		
Employed for wages	24	16
Self-employed	110	74
Homemaker/Student	6	4
Unemployed	9	6
Level of income (Monthly)		
<500,000	78	52
500,000-,1000,000	29	19
1,000,000-1,500,000	8	5
>1,500,000	35	24
Distance from health facility		
< 5 kilometers	45	30
5-10 kilometers	32	21
11-20 kilometers	31	21
> 20 kilometers	42	28
Years with HIV		
< a year	32	21
2 years	14	9
3 years	13	9
4 years	15	10
5 years and above	77	51

Of a total of 150 clients interviewed, equal proportions of 26% were in the age groups of 40–49 and 50–59 years, with a mean age of 46 years. The majority (65%) were female, with most (45%) being Anglicans, followed by Catholics (32%), Muslims (14%), and other religions (9%). Nearly half (45.1%) of the respondents were married. About 7% had tertiary education, while 37% had completed the ordinary level of high school. 24% had no formal education. The majority (74%) of the respondents were self-employed, with 4% being students and homemakers. Half of them (52%) earned less than 500,000 UGX per month, with a few (5%) of them earning between 1,000,000 and 1,500 UGX monthly. A third of the respondents (30%) stayed less than 5km from the health facility, while 28% lived over 20km away. More than half (51%) of the respondents have been living with HIV for more than 5 years (Table 1).

Table 2: Knowledge of ART

Variable	Frequency	Percentage
Mention the name of the ART drug you are taking		
Yes	70	47
No	40	27
Don't know	40	27
ART prevents mother-to-child transmission		
Yes	140	93
No	0	0
Don't know	10	7
HIV can be controlled by ART		
Yes	144	96
No	1	0
Don't know	5	4
HIV can be cured by ART		
Yes	2	1
No	111	74
Don't know	37	25
Taking ART prevents disease progression		
Yes	130	86
No	5	4
Don't know	15	10
Not starting ART when indicated to do so can worsen the disease		
Yes	108	72
No	3	2
Don't know	39	26
ART drugs have side effects		
Yes	105	70
No	4	3
Don't know	42	28
Missing ART drugs can worsen the disease		
Yes	100	67
No	3	2
Don't know	47	31
Missing ART drugs can lead to transmission of the disease		
Yes	94	63
No	2	1
Don't know	54	36
It is advisable to stop ART drugs when one suffers no opportunistic infection		
Yes	3	2
No	93	62
Don't know	54	36

Knowledge of ART among HIV patients was assessed. Nearly half (47%) knew the name of the ART they were taking, while 17% did not. Less than a third (26.7%) did not know the name of the ART drug they were taking. A large proportion (93%) stated that ART prevents mother-to-child transmission of infection, while 7% reported that they did not know. Nearly all (96%) respondents knew HIV could be controlled by ART. The majority (87%) stated that taking ART prevents disease progression, and 63% opined that missing ART drugs can lead to transmission of the disease. Six of the respondents (2%) indicated that it is advisable to stop ART drugs when one suffers from no opportunistic infection, but the majority (62%) stated otherwise. Detailed information can be found in Table 2. Respondent's knowledge of ART is summarised in Figure 1.

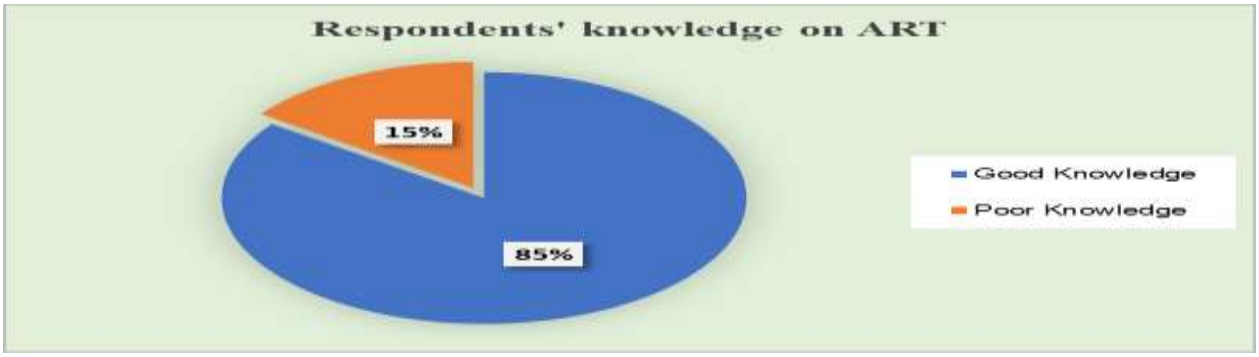

Figure 1: The majority (85%) had good knowledge, while 15% had poor knowledge of ART (Figure 1).

Table 3: Adherence to ART medication

Adherence measuring scale	Frequency	Percentage
Do you sometimes forget to take your medication?		
Yes	80	53
No	70	47
Were there any days when you did not take your medication in the past 2 weeks		
Yes	24	16
No	126	84
Ever cut back or stopped taking your medication without telling your doctor		
Yes	3	2
No	147	98
Sometimes forget to bring along your medicines when you travel/leave home		
Yes	57	38
No	93	62
Did you take all your medicines yesterday		
Yes	148	99
No	2	1
Sometimes stop taking your medicines when you feel like your symptoms are under control		
Yes	4	3
No	146	98
Do you ever feel hustled about sticking to your treatment plan?		
Yes	21	14
No	129	86
Difficulty remembering to take all your medicines		
Never/rarely	49	33
Once a while	79	53
Sometimes	22	14

More than half (53%) of the respondents sometimes forget to take their medication. (16%) of respondents indicated that there were days when they did not take their medication in the past 2 weeks. Nearly all (99%) respondents had taken their medication the previous day. Four (3%) of the respondents said they sometimes stopped taking their medicines when they felt their symptoms were under control. More than

half (53%) of the respondents stated they found it difficult sometimes to remember to take all their medicines. Overall, high adherence to ART was 39% while low adherence was 61%.

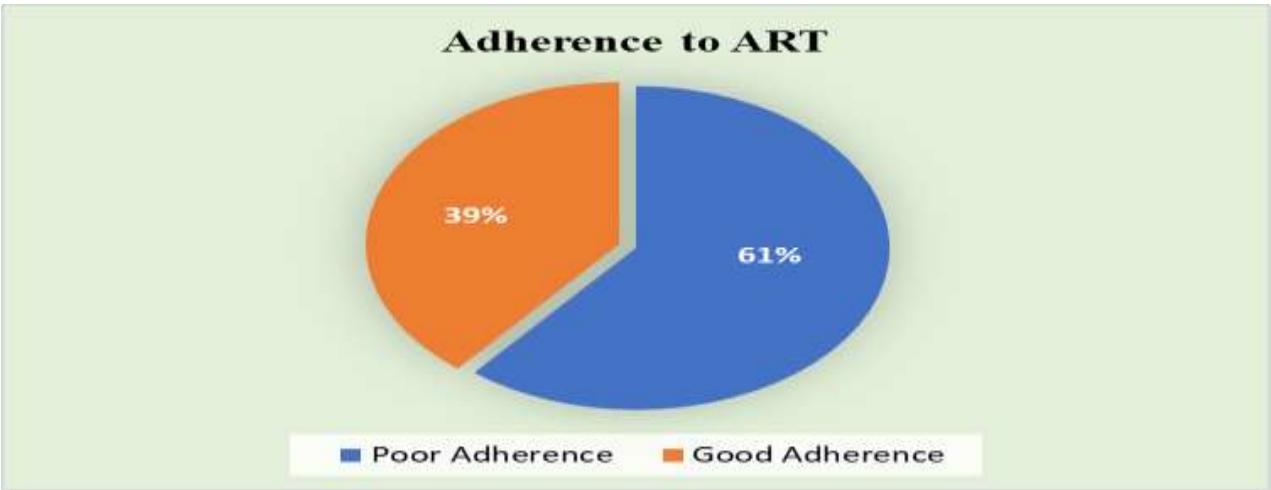

Figure 2: adherence to ART

Table 4: Experiences with ART

Variable	Frequency	Percentage
Number of ART drugs to take in a day		
One	113	75
Two	20	13
Three	18	12
Number of ART drugs missed in the past 2 days		
Zero	143	95
One	4	3
Two	2	1
Three or more	1	1
Number of ART drugs missed in the past 7 days		
Zero	137	91
One	8	5
Two	4	3
Three or more	1	1
Have challenges with ART drug acquisition		
Yes	3	2
No	147	98
Able to attend clinic/hospital during the stated hour		
Yes	148	99
No	2	1
Have a problem with travelling to the hospital/clinic		
Yes	19	13
No	131	87
Treated with respect by health workers during visits to the hospital		

Yes	150	100
No	0	0
Have privacy during consultation at the hospital		
Yes	148	99
No	2	1
Waiting time before attended to at the hospital		
1-5 minutes	2	1
10 minutes	1	0
15-20 minutes	1	1
30-45 minutes	10	7
An hour	95	63
More than an hour	42	28
Experience any side effects after taking ART		
Yes	49	33
No	101	67
Resort to traditional methods for treatment		
Yes	0	0
No	150	100
Have cultural beliefs about the condition		
Yes	2	1
No	148	99

The majority (75%) of the respondents take one ART drug per day; 13% take two per day; and 12% take three per day. Nearly all the respondents (98%) do not face any challenges with ART drug acquisition, and the majority (87%) do not have a problem travelling to a hospital or clinic for their ART drugs. All 100 respondents stated they had been treated with respect by health workers during their visit to the hospital. Nearly all (99%) have privacy during consultations at the hospital. None of the respondents resorted to traditional methods for treatment, but 1% indicated they have cultural beliefs about the condition. Table 4.4 contains details. The most (45%) perceived challenge to adherence to ART was forgetfulness, followed by sleeping away from home (22%), and daily routine (18%). Only a small percentage (0.4%) deliberately refuse to adhere to ART.

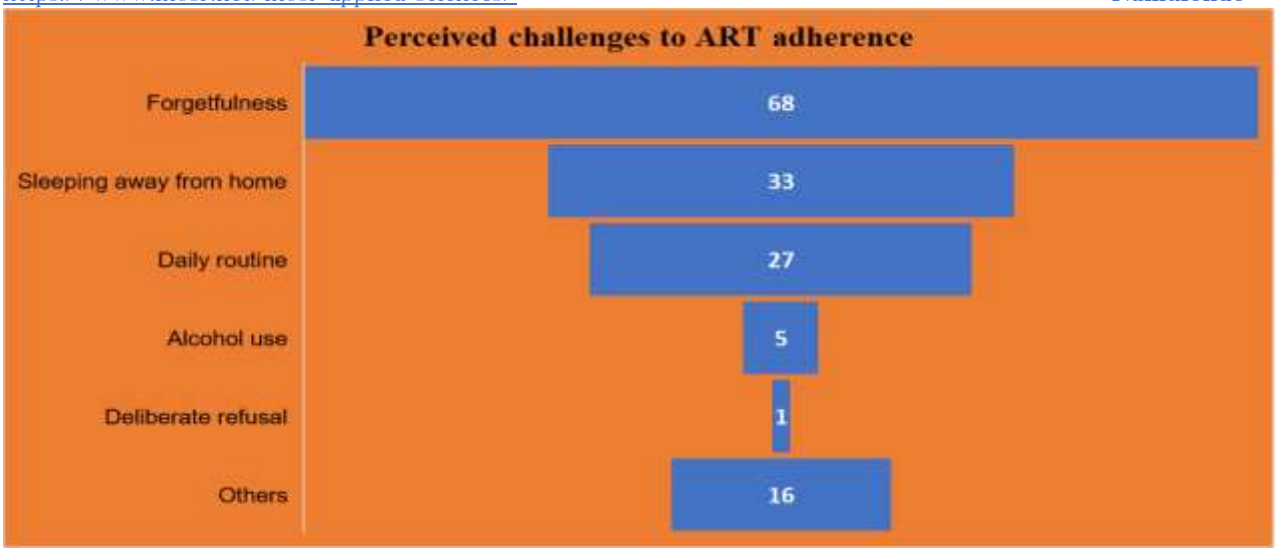

Figure 3 showing perceived challenges to ART adherence

Table 5: Association between different factors and adherence to ART

Variable	Frequency	Percentage	Adherence practices			
			Good		Poor	
Age (years)			N	%	N	%
< 30	11	8	2	19	9	81
30-39	37	25	12	32	25	68
40-49	39	26	16	41	23	59
50-59	39	26	18	45	22	55
60+	23	15	10	45	13	55
Gender						
Male	53	35	22	42	30	58
Female	98	65	37	38	60	62
Religion						
Anglicans	68	45	26	38	42	62
Catholic	48	32	27	56	21	44
Muslims	21	14	9	45	12	55
Other	14	9	5	37	9	63
Marital status						
Single	39	26	15	38	24	62
Married	68	45	27	40	41	60
Divorced	21	14	9	45	11	55
Widowed/Cohabiting	22	15	7	32	15	68
Level of education						
No formal education	35	24	16	46	19	54
Primary	31	21	12	40	19	60
Ordinary level	55	37	19	34	36	66
Advanced level	18	12	7	38	11	62

Tertiary	10	7	4	37	7	63
Employment status						
Employed for wages	24	16	9	39	15	61
Self-employed	110	74	43	39	67	61
Homemaker/Student	6	4	2	25	5	75
Unemployed	9	6	5	53	4	47
Level of income (Monthly)						
<500,000	78	52	38	49	40	51
500,000-,1000,000	29	19	8	28	21	72
1,000,000-1,500,000	8	5	1	14	7	86
>1,500,000	35	24	11	31	24	69
Distance from health facility						
< 5 kilometres	45	30	20	45	25	55
5-10 kilometres	32	21	14	44	18	56
11-20 kilometres	31	21	11	35	20	65
> 20 kilometres	42	28	13	31	29	69
Years with HIV						
< a year	32	21	15	46	17	54
2 years	14	9	4	28	10	72
3 years	13	9	7	54	6	46
4 years	15	10	4	26	11	74
5 years and above	77	51	29	38	48	62

DISCUSSION

The goal of the current study was to assess HIV patients' understanding of ART and the variables affecting their adherence to ART. It determined the degree of antiretroviral medication compliance among HIV patients. HIV infection is now a chronic, partially curable illness because of ART [16]. Unfortunately, the necessity for ongoing therapy remains a problem, especially in underdeveloped nations [17]. As a result of several social barriers that appear to affect adherence to ART, evaluations of antiretroviral therapy adherence appear to be a prevalent measurement in these nations [18]. Regardless of their side effects and the need for daily treatment, antiretroviral therapy regimens are essential for successful treatment and sustained viral control [19]. Only 39% of the respondents who were questioned for this study adhered to antiretroviral medication optimally. This ratio is undesirable since it means that more than half of the study population's patients are missing out on opportunities to maintain their health. As a result, this interferes with achieving the Sustainable Development Goals (SDGs), particularly goal three, which aims to secure everyone's well-being, as well as the 90-90-90 cascade. This finding, however, is in contrast to what was found in Togo [20], where 89.8% of the population adheres to ART regimens, and it is significantly higher than the 14.9% discovered in the study conducted at the Nnamdi Azikiwe University Teaching Hospital by Okoronkwo et al. [21]. This study's total adherence rate was also found to be lower than that seen in nearby Kenya [22]. These discrepancies in adherence levels could be attributed to geographic regions, adherence measurement techniques employed in different research, ecological barriers, cultural norms, varied health systems, and other methodological variances. Among several factors, the duty of family caregivers to adhere to and retention to antiretroviral medication (ART) is critical in promoting global adherence to ART among people living with HIV [23]. Comprehensive HIV education is essential among HIV patients to decrease HIV transmission and super-infection [24]. Furthermore, an individual's understanding of their medical condition and treatment recommendations is linked to successful medication adherence [25]

including a lower viral load and a higher CD4 cell count [26]. Knowledge about an intervention is critical since it has the potential to dispel any doubts and misconceptions regarding antiretroviral therapy. It serves as a motivator and source of hope for the vast majority of HIV-infected people. This study indicated that the knowledge of HIV patients at KIUTH was high. These findings are consistent with earlier research on HIV patients in SSA [27]. The findings are also consistent with previous research in Nigeria, where around 80.8% of HIV-positive patients had a strong understanding of antiretroviral medicines [28]. The high level of knowledge on ART found in this survey could be attributed to the fact that the majority of those engaged in this study have some level of education, with only 23.5% having no formal education. This trait may pique their interest in researching and better understanding the disease dynamics that are hurting them. Another factor could be that more than half of the HIV-positive people interviewed in this study had had the virus for more than 5 years. As individuals progress or live with the ailment, they may have a better understanding of the reasons, symptoms, and potential treatments. Their improved understanding may also be related to subsequent visits to antiretroviral therapy units. This study found that HIV patients on antiretroviral therapy had a general understanding of antiretroviral therapy. However, understanding of several items was restricted. For example, 26% of participants were unaware that failing to initiate antiretroviral therapy when suggested could aggravate the disease, and 26.7% were unaware of the name of the antiretroviral therapy pill they were receiving. The causes of optimal adherence among people living with HIV were ART knowledge, employment status, and financial level. This was evident in a study conducted by Heestermans et al. [29], in which drinking, traditional medicine usage, stigmatization, and dissatisfaction with healthcare facilities and healthcare professionals were factors impacting adherence to ART. The study discovered that patients' income level was related to adherence to ART. Despite this income disparity, the majority of respondents have no issue travelling to a hospital to obtain medications. Potchoo et al. [20], on the other hand, identified treatment costs such as transportation, dietary support, and laboratory tests as major barriers to optimal adherence among their patients. Zachariah et al. [30] discovered that money is a crucial factor contributing to non-adherence. As a result of limited cash and travel costs, people with lower incomes forego their medications. David et al. [31] discovered that the cost of transportation and the difficulties associated with travel prevent people from attending hospitals for their medications. According to Lulebo et al. [32], the client's view of the quality of service offered and adherence are affected by their financial level. He believes that the higher the patient's income, the higher the patient's expectations of service quality and adherence. According to this logic, any additional costs related to therapy must be kept to a minimum to encourage patient patronage. The study also discovered that employment status is one of the factors influencing patients' non-adherence to ART medicines. Unemployed and homebound individuals may find it difficult to travel to ART clinics for medications. According to the study, a rise in wealth reduces the likelihood of adhering to ART. Other research has not properly shown this, as they discovered that a high level of wealth increases the likelihood of adhering to ART [29]. This finding could be attributed to the fact that the more money people earn, the less busy they become, as seen by the fact that 76.3% of those interviewed were self-employed. Well-informed people are more likely to stick to their ART regimens. Adequate knowledge could raise awareness, importance, and comprehension of the importance of adhering to ART. This could be because the majority of those polled were knowledgeable about ART, which could be a predictor of adherence. Finally, people who work at home or are students were 0.09 less likely to practice ART. This group of persons is indirectly unemployed; yet, students may avoid ART due to stigma, ridicule, and other factors. Similarly, homemakers have been observed to have less initiative and strength in their health-seeking behaviour. They are frequently associated with their incapacity to make independent decisions, including health ones. They live in a quandary and are influenced by others' health decisions, which are similar to seeking ART regimens.

CONCLUSION

In conclusion, the study discovered a high degree of awareness but a low level of adherence to ART among patients living with HIV. Forgetfulness, financial level, employment status, and knowledge of the benefits of the intervention are all important factors in nonadherence among some HIV patients. Antiretroviral therapy (ART) services are medical therapies that aim to reduce morbidity and mortality in HIV patients. The success of ART services is dependent on patients' compliance with ART medications. Treatment failure is a result of noncompliance. As a result, ART clinics should increase the level of education provided to customers to encourage patients to take complete responsibility for their health status.

Recommendations

Periodic onsite training of ART clinic health workers on adequate counselling approaches, with each session highlighting the importance of strict adherence to ART medications among patients, is likely to motivate customers to use ART services, resulting in increased adherence. The cost of HIV laboratory testing and other healthcare expenses should be subsidised or covered by the National Health Insurance Scheme (NHIS) so that all patients, regardless of their work position or economic level, can afford ART therapies. Clients should be reminded of the necessity of adhering to their medication every time they visit an ART facility. This will most likely lessen the forgetfulness linked with drug use. HIV patients and their healthcare professionals should collaborate to establish appropriate ART schedules to ensure medication adherence. This is also likely to lessen the inclination of customers towards amnesia linked to drug use. HIV patients should continue to take their ART medicine to improve their health and avoid treatment failure.

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CITE AS: Namulondo Bayati (2024). Assessment of Factors Associated with Adherence to Antiretroviral Therapy among HIV Patients at Kampala International University Teaching Hospital in Ishaka, Uganda. **INOSR APPLIED SCIENCES 12(1):69-82. https://doi.org/10.59298/INOSRAS/2024/12.1.69821**