

Factors influencing ART adherence among adult HIV positive patients attending a Rural Hospital in Kenya

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Abstract

Background: HIV virus is a leading cause of morbidity and mortality in the world with 36.7 million people living with the virus globally (UNAIDS 2017). It's managed through ART treatment whose success greatly depends on high levels of adherence (>95%).

Purpose: This study was to determine the factors influencing antiretroviral therapy (ART) adherence among adult HIV positive patients attending a rural hospital in Kenya.

Methodology: An institutional based cross-sectional study was conducted at Mang'u Integrated AIDS Program. Systematic sampling was used to select 157 respondents from patients who visited the facility for antiretroviral therapy. The primary outcome was ART adherence measured using 7 days ART dose recall. Descriptive statistics were presented as frequency and percentages and bivariate analysis using Chi-square was done to compare categorical variable.

Results: The study established a (56.7%) ART adherence. The most adherent were aged 31-40 while 51-60 were the least adherent. Almost two thirds, 96(61.1%) were females. More males, 49 (80.3%), were non adherent as compared to females, 67 (69.8%).

Work and need to look for food were important factors in adherence, with (51.1 %) non-adherent due to work and (52.4%) non adherent due to need to look for food. Although majority had no fears of disclosure, half, 60 (51.7%) were non adherent. Half of the patients, 85 (55.6%) were counseled before testing and initiating ART and 88(56.4%), were helped to accept their status. Before initiating ART, more than half, 85(55.9%, were informed on types of art and 84(57.1%) were highly satisfied with ART dosage.

Conclusion: The seven day ART adherence was low, with only 56.7% taking 95% of prescribed ART dose. Need to look for food and work were related with non-adherence to ART.

Recommendation: Since majority of the respondents were satisfied with ART and had no problem with disclosure, a further study is recommended to establish the predictors of non-adherence. Efforts to address work related barriers should also be addressed.

Key words: ART, Adherence, Factors influencing adherence

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I. Introduction

1.1 Background information

The Human immunodeficiency virus (HIV) and Acquired immunodeficiency syndrome (AIDS) epidemic remains a great challenge globally, there are 36.7 million people living with HIV. Despite the dramatic improvement in survival and marked reduction in transmission through antiretroviral therapy (ART), a sustained effect depends on high levels of adherence (>95%) to daily oral dosing. Poor ART adherence increases the risk of viral drug-resistance, limits treatment efficacy, leading to disease progression, and reduces future therapeutic options as well as increasing the risk of transmission due to unsuppressed viral replication, (Kim et al., 2014). Continued success of ART will depend critically on sustained high ART adherence, (Chaiyachati et al., 2014). ART adherence refers to the number of people who are eligible for ART and who actually start it (WHO, 2013). Antiretroviral treatment success depends on sustainable high rates of adherence to medication regimen of ART. Non-adherence to ART has been associated with health condition/disease, healthcare system and healthcare teams, therapy/treatment and socio-economic factors. Adherence in Kenya is reported to vary from 48.0% in Kibera, Nairobi; 56.8% in Eldoret and 64% in Mombasa, (Wakibi, Ng'ang'a, & Mbugua, 2011). Antiretroviral therapy (ART) delay progression to AIDS, improves quality of life through sustained virologic and immunologic response, and improve survival, (WHO, 2005). In sub-Saharan Africa, there has been a dramatic increase in the number of HIV/AIDS patients on antiretroviral treatment from 100,000 persons in 2003 to 3.9 million in 2009 involving close to 40% of those in need of the treatment, (Reda & Biadgilign, 2012). Strict adherence to antiretroviral therapy (ART) is a cornerstone to sustained HIV suppression, reduced risk of drug resistance, improved overall health, quality of life, and survival, as well as decreased risk of HIV transmission. Poor adherence is the major cause of therapeutic failure, (K.C Nischal, 2005). Patients with adherence-related

challenges should be identified and given attention and appropriate strategies to enhance adherence are essential, (Guidelines for the Use of Antiretroviral Agents in HIV-1- Infected Adults and Adolescents, 2014). Some of the reasons attributed to poor adherence to ART include; stigma, discrimination and failure of ART retention. Other reasons are: Traveling/transport cost, limited information about ART, experiencing side effects like weakness and sickness, non-disclosure to partner, conflict of religious beliefs and poor counseling and testing status, (UNAIDS, 2013). HIV/AIDS continues to be a burden in Africa and in Kenya. According to the National Aids Control Council (2015), HIV/AIDS accounted for 29.0% annual deaths. According to the Kenya AIDS Response Progressive Report 2016 by National AIDS Control Council (NACC, 2016), despite improved treatment with ART coverage of 66.0% in Kenya, combating HIV infections face challenges with increasing new infections of 5.1% among adults aged 15 – 49 years and 5.9% prevalence in 2015. ART prolongs life, reduces co-morbidities and reduces HIV transmission to uninfected people. The recommended ART adherence rate is 95% and above, (WHO, 2013). Adherence to ART in Kenya varies significantly, hence affecting the efforts to combat HIV/AIDS. Adherence is reported to vary from 48.0% in Kibera, Nairobi; 56.8% in Eldoret and 64.0% in Mombasa, (Wakibi,Ng'ang'a, &Mbugua,2011). At Mang'u Integrated AIDS Program, among patients scheduled monthly for ART, an estimated 21% had missed their appointment.

II. Materials and Methods

A cross- sectional study was conducted in Mang'uIntegrated AIDS program located in Gatundu North constituency 15 Kilometres from Thika town. The main objective was to determine factors influencing ART adherence among adult HIV positive patients attending Mang'u Integrated Aids Program. The specific objectives included: to determine the level of ART adherence among HIV Positive patients; to establish the demographic factors influencing ART adherence; to Find out patient related factors that influence adherence among HIV positive patients and to assess patient satisfaction with ART treatment. People living with HIV/AIDS aged above 18 years were recruited in the study. Patients aged below 18 years and those who were not covered by the program were excluded. A sample size of 384 was determined by using single population proportion formula (Fischer et al., 1998; $n = Z^2pq/d^2$) by considering 95% CI, 50% and absolute precision of 0.05. However, the sample size was adjusted to 157 respondents using the formula:

$$nf = \frac{n}{1 + n/N}$$

Interviewer administered questionnaires were used to collect quantitative data. Descriptive statistics were computed for frequency distributions. Cross- tabulation was conducted for categorical variables using Chi square for statistical associations at a 95% confidence intervals. Research Ethical review and approval was obtained from the KNH/UON Ethical and Research Committee, (Approval UP175/03/2017).

III. Results

Table 1: Demographic characteristics

Demographic characteristics	n	Percentage	
Age of respondent	Below 20 years	4	2.5
	20-30 years	14	8.9
	31-40 years	25	15.9
	41-50 years	69	43.9
	51-60 years	45	28.7
Gender of respondent	Male	61	38.9
	Female	96	61.1
Level of education	No education	17	10.8
	Primary	82	52.2
	Secondary	48	30.6
	College	5	3.2
	University	5	3.2
Marital status	Single	35	22.3
	Married	61	38.9
	Separated/Divorced	31	19.7
	Widow/Widower	30	19.1
Source of income	Employed	36	22.9
	Self employed	68	43.3
	Others	53	33.8
Patient's religious affiliation	Catholic	58	36.9
	Protestant	87	55.4
	Muslim	1	0.6
Patients living arrangements	Others	11	7.0
	Alone at home	24	15.0
	With family	130	82.8
	Significant other	3	1.9

Respondents aged between 41-50 years constituted the largest proportion of the study population. More than half, 96(61.1%) were females. More than half, 82(52.2%) had primary education, a third, 40(30.6%) secondary education, while 17(10.8%) had no formal education. Those with college or university education were 5(3.2%). More than a third, 61(38.9%), were married 35(22.3%) were single, 31(19.7%) were either divorced or separated while 31(19.1%) were widowed or widowers. Slightly less than half, 68 (43.3%) were employed while a third, 53(33.8%) were self-employed. Majority, 130(82.8%) were living with their family, a fifth 24, (15.3%) were living alone at home and 3(1.9%) lived with significant others, (table 1).

Table 2: Level of ART adherence using 7-day recall

	Frequency	Percent
Number of doses missed in last 7 days None	44	28.0
One	45	28.7
Two	41	26.1
Three	16	10.2
More than Three	11	7.0
Total	157	100.0

ART adherence was assessed using 7 day recall of taking 95% of prescribed dose (missing no more than 1 dose) was 89(56.7%). The study established a (56.7%) ART adherence. Less than a third, 44(28.0) had taken all prescribed doses while 45(28.7%) had missed one dose. About 68(43.3%) had missed more than one dose in the last seven days prior to the study.

4.4 Demographic factors influencing ART Adherence

Table 3: Demographic factors influencing ART adherence

	Adherent		Non adherent		P value
Age	F	(%)	F	(%)	
Below 20 years	4	100.0%	0	0.0%	
20-30 years	12	85.7%	2	14.3%	0.021
31-40 years	14	56.0%	11	44.0%	
41-50 years	31	44.9%	38	55.1%	
51-60 years	26	57.8%	19	42.2%	
Gender					
Male	29	47.5%	32	52.5%	0.078
Female	58	60.4%	38	39.6%	
Level of education					
No formal education	7	41.2%	10	58.8%	
Primary	45	54.9%	37	45.1%	0.464
Secondary	29	60.4%	19	39.6%	
College	2	40.0%	3	60.0%	
University	4	80.0%	1	20.0%	
Marital status					
Single	23	65.7%	12	34.3%	
Married	32	52.5%	29	47.5%	0.582
Separated/Divorced	16	51.6%	15	48.4%	
Widow/Widower	16	53.3%	14	46.7%	
Source of income					
Employed	17	47.2%	19	52.8%	0.366
Self employed	37	54.4%	31	45.6%	
Others	33	62.3%	20	37.7%	
Religious affiliation					
Catholic	32	55.2%	26	44.8%	
Protestant	50	57.5%	37	42.5%	0.607
Muslim	0	0.0%	1	100.0%	
Others	5	45.5%	6	54.5%	
Living arrangements					
Alone at home	11	45.8%	13	54.2%	0.415
With family	75	57.7%	55	42.3%	
Significant others	1	33.3%	2	66.7%	

The younger, 20-30 years were more adherent, 12(85.7%), compared to older, 41-50 years, 31(44.9%). Adherence was higher among the single, 23(65.7%), compared to the married, 32(52.5%), divorced, 16(51.6%) or widowed, 16(53.3). Females, 58(60.4%) were more adherent than males 29(47.5%). Non-adherence was highest among the employed, 19(52.8%), compared to self-employed, 31(45.6%). Only age, (P=0.021) was statistically significantly associated with ART adherence (table 3).

4.5. Patient related factors influencing ART adherence

Table 4: Patient related factors influencing ART adherence

		ART Adherent		ART Non-Adherent		P Value
		F	%	F	%	
Need to look for food	Strongly disagree	36	54.5	30	45.5	0.492
	Disagree	19	61.3	12	38.7	
	Agree	12	66.7	6	33.3	
	Strongly Agree	20	47.6	22	52.4	
Work	Yes	50	50.0	50	50.0	
	No	37	64.9	20	35.1	
No money for transport	Strongly Disagree	26	41.9	36	58.1	0.037
	Disagree	24	70.6	10	29.4	
	Agree	23	62.2	14	37.8	
	Strongly agree	14	58.3	10	41.7	
Facility is far from my home	Strongly disagree	22	39.3	34	60.7	0.005
	Disagree	31	72.1	12	27.9	
	Agree	28	63.6	16	36.4	
	Strongly agree	6	42.9	8	57.1	
Distance to clinic	Strongly disagree	34	50.0	34	50.0	0.223
	Disagree	22	61.1	14	38.9	
	Agree	25	65.8	13	34.2	
	Strongly agree	6	40	9	60	
Means of transport	Strongly disagree	53	54.6	44	45.4	0.554
	Disagree	17	56.7	13	43.3	
	Agree	6	42.9	8	57.1	
	Strongly agree	11	68.8	5	31.2	
Cost of Health services	Strongly disagree	70	56.9	53	43.1	0.075
	Disagree	13	59.1	9	40.9	
	Agree	2	20.0	8	80.0	
	Strongly agree	2	100	0	0.0	
Harsh health worker	Strongly Disagree	74	53.2	65	46.8	0.269
	Disagree	6	75.0	2	25.0	
	Agree	3	100	0	0	
	Strongly agree	4	57.1	3	42.9	
I don't think the drugs are important	Strongly disagree	69	53.5	60	46.5	0.633
	Disagree	3	50.0	3	50.0	
	Agree	2	66.7	1	33.3	
	Strongly agree	13	68.4	6	31.6	
I don't want people to know	Strongly disagree	33	61.1	21	38.9	0.536
	Disagree	5	71.4	2	28.6	
	Agree	2	50.0	2	50.0	
	Strongly agree	47	51.1	45	48.9	

More than half, 22(52.4%), of the ART non-adherent patients strongly agreed that they missed their doses because of the need to look for food. Another half, 50(50.0%), missed drugs because of work. About 9(60.0%) while missed drugs because of distance to clinic, 8(80%) cost.

Though majority of the adherent respondents 46(66.7%) said that work did not influence adherence, 45(51.1%) non-adherent agreed that work influenced adherence. Lack of money for transport, 10(41.7%), was statistically associated with non-adherence, (P=0.037). About 45(48.9%) who were non-adherent, strongly said they didn't want other people to know of their HIV status.

4.6 HIV pre- testing services and ART adherence

Table 5: Pre- Testing factors and adherence levels

HIV pre- testing variables		Adherent		Non-Adherent		P Value
		f	%	f	%	
Counseled before test	Yes	83	54.2	70	45.8	0.091
	No	4	100.0	0	0.0	
Helped to accept HIV Status	Yes	86	55.1	70	44.9	0.554
	No	1	100.0	0	0.0	
Informed on types of ART	Yes	83	54.6	69	45.4	0.259
	No	4	80.0	1	20.0	

The study revealed that the hospital offered patient support services prior to HIV testing and ART initiation. Among those who were counseled, 83(54.2%), were adherent. About 86(55.8%) who were helped to accept their HIV status, were more adherent. Similarly, more than half, 83 (54.6%), who were informed on the types of medication were adherent. Conversely, majority of patients who didn't receive pre- testing support

services were non- adherence to ART.

Table 6: Facility factors and ART Adherence

Facility factors	Level of satisfaction With facility factors	Adherent f, (%)	Non-Adherent f, (%)	Total f, (%)	P Value
Courtesy	Highly satisfied	80(54.1)	68(45.9)	148(94.2)	0.376
	Fairly satisfied	3(75.0)	1(25.0)	4(2.6)	
	Dissatisfied	4(80.0)	1(20.0)	5(3.2)	
Privacy	Highly satisfied	76(53.9)	65(46.1)	141(89.8)	0.464
	Fairly satisfied	5(62.5)	3(37.5)	8(5.1)	
	Dissatisfied	6(2.0)	2(25.0)	8(5.1)	
Confidentiality	Highly satisfied	78(54.5)	65(44.5)	143(91.1)	0.309
	Fairly satisfied	2(40.0)	3(60.0)	5(3.2)	
	Dissatisfied	7(77.8)	2(22.2)	9(5.7)	
Information on ART	Highly satisfied	80(54.1)	68(45.9)	148(94.3)	0.340
	Fairly satisfied	2(66.7)	1(33.3)	3(1.9)	
	Dissatisfied	5(83.3)	1(16.7)	6(3.8)	
Supportive drugs	Highly satisfied	80(55.9)	63(44.1)	143(91.1)	0.086
	Fairly satisfied	2(25.0)	6(75.0)	8(5.1)	
	Dissatisfied	5(83.3)	1(16.7)	6(3.8)	
Dosage	Highly satisfied	82(55.8)	65(44.2)	147(93.6)	0.152
	Fairly satisfied	1(20.0)	4(80.0)	5(3.2)	
	Dissatisfied	4(80.0)	1(20.0)	5(3.2)	

Majority, werehighlysatisfiedwiththe following services at the hospital: courtesy, 148(94.2) with privacy,143(91.1), confidentiality,143(91.1), information given on the ART,148(94.3), availability of supportive drugs, 143(91.1), and dosage, 147(93.6).

IV. Discussion, Conclusion, And Recommendations

Thestudyfoundthatmajorityoftherespondents,43.9 % (69)wereagedbetween41-50yrs.Majority, 61.1%, (96) were females while 38.9 % (61) were males. About the marital status 61 (38.9%) respondents were married and aged between 41-50 years. 68 respondents(43.3%)were self-employed.130(82.8%)werelivingwiththefamilyandmajorityofthem were protestants. These findings concur with those of Eyassu, Tebogo,&Mambo, (2015) but slightly differ from Achappa, et al., (2013) in South India whereby majority of respondents were aged between 21-40 years and were males and 86% of the population wasilliterate.

The study established ART adherence levels of (56.7%), below the recommended 95.0%. Thisstudyfindings are lower than the 72.9% adherence levels reported in a systematic review in Africa,(Heestermans et al., 2016), the 77.0% levels reported in Kwa- Thema clinic in South Africa (Eyassu et al., 2015) and the 76.0% levels reported in Ivory Coast, (Eholie et al., 2007).

Level of education had no specific influence on adherence in the study population; hence adherence was likely a result of other factors. This differs with a study in Ethiopia, (Eyassu et al., 2015) and Kenya, (Nyambura, 2009), where lack of formal education was a key factor to adherence of ART treatment.

Majority aged 41-50 years, 52(76.5%), were non-adherent. This differs with another,(Eyassu et al., 2015) which found that age did not influence adherence but agrees with a study in Eastern Ethiopia which found out that age significantly influenced adherence, (Letta, et al 2015). With advancing age, patients could be facing increased family responsibilities such as provision of family food and education hence may miss drugs when they go out to work. Men were more non-adherent compared to women which is similar to other findings,(Achappa, et al., 2013;Eyassu et al., 2015) which found out that women were adherent compared to men but differs with another, (Wasti et al., 2012). Age and gender have been identified as main contributors to ART adherence in Kenya,(Kangendo & Gitonga, 2017). However, our findings contrast those done in the same geographical area of Kiambu in 2014, (Mwangi, Ng'ang'a, Wanzala, & Karanja, 2014). This can be explained by the general low levels of health seeking behaviours among men compared to women. Additionally, females tend to frequent hospitals more than males given their role in taking care of sick children in the family, hence more opportunities to continue on ART.

Majority, 45 (51.1%) respondents missed their doses because of work. This concurs with several studies carried in Africa, (Kalichman&Grebler,2010, Kagee et al.,2011 and Wasti et al.,2012; HabtamuMitiku, TekabeAbdosh, and ZelalemTeklemariam, 2013).Though majority of the adherent respondents 46(66.7%) said that work did not influence adherence, 45(51.1%) non-adherent agreed that work influenced adherence.Lack of money for transport, 10(41.7%), was statistically associated with non- adherence, (P=0.037). About a half, 45(48.9%), who were non-adherent, strongly said they dint want other people to know of their HIV status are likely non- adherent than those who disclose, (Letta et al., 2016). Patients who find it difficult to disclose their HIV status are Lack of disclosure This is possibly because majority of Kenyans fear disclosure

and do not want others to know their HIV status due to the associated stigma.

Patients who were offered HIV testing support services prior to HIV testing and ART initiation such as counselling, support to accept the HIV status and informed on the types of medication were more adherent compared to others who did not receive the services. These services would likely shape the patients' health belief and health seeking behavior. In a systematic review of factors influencing ART adherence in Africa, counselling, among other factors was a promoter of adherence, (Heestermans et al., 2016).

There was dissatisfaction with the following services at the hospital: courtesy, privacy, confidentiality, information given on the ART, availability of supportive drugs, and dosage.

These findings differ with studies those in other studies where respondents had reservations about level of courtesy and confidentiality, (Reda & Biadgilign, 2012; Mhaskar et al., 2013). Elsewhere, dissatisfaction with healthcare facility and healthcare workers has been associated with poor adherence to ART, (Heestermans et al., 2016).

5.3. Conclusion

Only 56.7% took 95% of the prescribed antiretroviral therapy drugs, a low adherence level. Work, need to look for food, age, and gender were factors found to influence adherence. Pre-testing and ART initiation patient support factors influenced adherence. Majority of the patients were satisfied with facility related factors like courtesy of the healthy worker, privacy, confidentiality, availability of information.

5.4.0 Recommendations

1. The low levels of ART adherence calls for all stakeholders to intensify interventions towards ensuring increased adherence to ART drugs.
2. All HIV testing centers should focus on patient support services prior to testing and initiation into antiretroviral therapy.

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Appendix 6: KNH-UoN Ethics and Research Committee Approval



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25th April 2017

Mariana Nthambi Mwikali
Reg. No.1030541
Regina Pacis Institute of Health Sciences
The Catholic University of Eastern Africa

Dear Mariana

Research Proposal: Factors influencing ART Adherence among HIV positive patients aged 18 and above attending Mang'u Integrated AIDS Program, Thika, Kiambu county (UP175/03/2017)

Your above proposal refers.

This is to inform you that permission has been granted by the KNH- UoN Ethics & Research Committee to carry out research on study titled **"Factors influencing ART Adherence among HIV positive patients aged 18 and above attending Mang'u Integrated AIDS Program, Thika, Kiambu county"**.

By a copy of this letter, I am requesting the relevant persons to accord you the professional support and other materials that may be useful to your research.

Yours faithfully,



PROF.M.L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
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