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FACTORS ASSOCIATED WITH ANTI-RETROVIRAL TREATMENT FAILURE AMONG HIV/AIDS PATIENTS IN KIBERA SLUMS, NAIROBI COUNTY

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ABSTRACT

Background: The introduction and scale up of anti-retroviral therapy (ART) has reduced HIV-related morbidity and mortality, this advantage will however be eroded if factors associated with anti-retroviral treatment failure are not identified and well addressed.
Objective: To determine factors associated with anti-retroviral treatment failure among adult HIV/AIDS patients in Kibera slums, Nairobi county.
Design: Descriptive cross-sectional study
Setting: AMREF-Kibera community based Health Centre
Subjects: Adult HIV/AIDS patients who have been on ART for six months and above
Results: It was clear that knowledge, attitudes and practices have a significant effect on anti-retroviral treatment failure with 86 % of the respondents agreeing that herbal medicine can be used as an alternative to ART while 75 % agreed that one does not need ART if they do not have AIDS. Poor adherence practices was also observed with the main reason of missing medication being due to stigma 81% followed by pill burden 78% and side effects 75%. The odds of ART failure were 1.09 times higher for those with poor knowledge about the purpose of ART drugs (ART Drugs are to Cure HIV AIDS). The odds of ART failure were 1.183 times higher for those with poor attitude (ART is a waste of Time). The odds of ART failure were 1.468 times higher for those with poor practices. The odds of ART Failure were 1.559 times higher for those with poor adherence practices as opposed to those with good adherence practices.
Conclusion: Inadequate knowledge and poor attitudes towards ART in addition to poor adherence practices were associated with anti-retroviral treatment failure. The study therefore recommends that there is an urgent need to educate HIV/AIDS patients on ART and good adherence practices to avoid anti-retroviral treatment failure.

INTRODUCTION

Acquired Immune Syndrome (AIDS) is one of the most destructive epidemics the world has ever witnessed. Presently an estimated 33.4 million people are living with HIV worldwide, nearly two thirds of these live in sub-Saharan Africa (1). Infection with the Human Immunodeficiency Virus (HIV) leads to depletion of the immune system and increases the risk of opportunistic conditions which are responsible for increased mortality (2). The introduction of highly active anti-retroviral combination therapy (HAART) since 1996 has substantially improved the prognosis of HIV-infected patients in industrialised countries (3). Anti-retroviral therapy restores immune function and reduces HIV-related morbidity and mortality (4). In addition, anti-retroviral therapy has shown to delay progression to AIDS, resulting in greater and more sustained virological and immunological response and improve survival (5).

In sub-Saharan Africa, there has been a dramatic increase in the number of HIV / AIDS patients on anti-retroviral treatment from just 100,000 persons in 2003 to 3.9 million in 2009 involving close to 40% of those in need of the treatment (6). Anti-retroviral therapy is long term treatment with potential of drug toxicity and probable emergency of resistance which results into treatment failure. Only few drugs were available initially, but today over 20 approved anti-retroviral drugs from four drug classes are available, including nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), and fusion inhibitors. Globally, there has been a pronounced

increase in scaling up anti-retroviral therapy services notably in sub-Saharan Africa. In industrialised countries doctors prescribe from the full range of available anti-viral drugs. Resistance testing and frequent monitoring of CD4 cell counts and viral load are used to individually tailor drug regimens. Several studies in Europe and North America have reported robust improvements in CD4 cell counts following ART initiation in clinical trials and in observational studies (7). In addition, CD4 count at the time of ART initiation is an important determinant of the degree of immunologic and virologic response (8) as well as subsequent risk of morbidity and mortality (9). Among those patients who are able to remain on ART, robust immunologic responses can be maintained for long periods (10) and the risk of serious morbidity and mortality may eventually diminish to levels observed in the general population (11). In sub-Saharan Africa, many patients who experience virological failure do not switch to potent second-line regimens due to resource limitation (12).

An estimated two million people living with HIV/AIDS were receiving treatment in low and middle income countries by December 2006, representing 28% of the estimated 7.1 million people in urgent need of treatment at that time (WHO, 2007). Despite the optism surrounding the expansion of anti-retroviral therapy services throughout sub-Saharan Africa, concerns have been raised about how best to monitor patients for treatment response, to asses' durability of the current regimens, and to determine the risk of transmitted and acquired drug resistance (13). According to recent studies, ART regimens require 70-90% adherence in order to be effective (14). However, sustainability to adherence to anti-retroviral therapy (ART) over the long term requires accurate and consistent monitoring, and this is a particular challenge for countries in sub-Saharan Africa (14). It is further challenged by various social and clinical obstacles. Where inadequate suppression of viral replication by ART are resulting due to poor adherence to therapy, low potency of the anti-retroviral regimens, viral resistance to anti-retroviral medications, and pharmacokinetic interaction (15) causing inadequate drug delivery (16). The transmissibility of anti-retroviral resistant viruses from person to person further compounds the problem as a clinical and public health challenge (17).

According to Kenya AIDS Indicator Survey (KAIS) 2012 Report, 58% of HIV-infected persons aged 15-64 were eligible for anti-retroviral (ART) treatment. 63% were currently on ART and among those on ART, 78% achieved viral suppression. Studies have been done on factors associated with treatment failure, a study done by (18) in a systemic review after a median follow-up period of 12 months on patients on ART in their setting, found out 76% viral suppression among those patients. A particular study by (19) at the HIV clinic in Kilifi District Hospital suggested that in every four adults on first-line anti-retroviral therapy regimen for an average of 14 months had virological failure. This study has not been carried out in a large slum like in the case of Kibera. Therefore this study aims at determining factors that are associated with treatment failure in such a resource-limited setting.

MATERIALS AND METHODS

The study was conducted at the AMREF-Kibera Community-Based Health Centre (AKCBHC) situated at Lini-saba. Kibera is situated in the western part of Nairobi County. Study subjects consisted of HIV/AIDS patients attending the AMREF-Kibera Community-Based Health Centre. This was a cross-sectional design that utilised quantitative method of data collection. The proportion of Factors associated with anti-retroviral treatment failure was obtained from previous studies such as that carried out by (19) and (18) after a median follow-up period of 12 months on patients on anti-retroviral treatment and found to be 24% (based on 76% viral suppression after 12 months on anti-retroviral treatment. Systematic random sampling was used to recruit eligible patients into the study. Using the daily register for appointments, a structured questionnaire was administered to every 10th patient who had been on anti-retroviral treatment for at least six months until the 280 sample size was attained The questionnaire that was administered to the study participants, mainly focused on knowledge, attitudes and practices of HIV/AIDS patients on anti-retroviral therapy. Data obtained from the study was entered into MS Excel database, coded and secured by a password to ensure confidentiality. Data from questionnaires was analysed using SPSS version 20. Inferential statistics inform of chi-square and multivariate odd ratio regression analysis was conducted to assess the association.

RESULTS

Table1
Knowledge of HIV/AIDs Patients on ART

Variable	Strongly Agree	Agree	Disagree	Strongly Disagree
ART helps to prolong Life	72%	19%	3%	6%
There is no need for ART if the CD4 is above 500	49%	28%	3%	3%
Reduces the viral load	42%	44%	6%	3%
ART consists of drugs to suppress HIV/AIDs	61%	29%	5%	1%
ART consists of drugs to cure HIV/AIDs	56%	33%	3%	4%

Table 2
Attitude of HIV/AIDs patients on anti-retroviral therapy

Variable	Strongly Agree	Agree	Disagree	Strongly Disagree
Taking ART without food will make someone sick	39%	28%	25%	6%
Taking ART is associated with stigma	36%	28%	17%	3%
You should take ART when you feel sick	50%	28%	3%	3%
Taking ART is tiring	31%	17%	31%	3%
ART is a waste of time	47%	28%	3%	6%

Table 3
Practices of HIV/AIDs patients and Anti-retroviral Therapy

Variable	Strongly Agree	Agree	Disagree	Strongly Disagree
I sometimes use Traditional/herbal medicine as an alternative treatment.	56%	28%	3%	5%
I usually forget to use protection during intimacy	14%	28%	28%	3%
I rarely eat a balance diet when taking medication	47%	28%	3%	6%
I rarely exercise when taking ART	47%	28%	3%	6%
I usually share ART with other people who are HIV/AIDS.	70%	15%	4%	5%
Use of alcohol would interfere with ART absorption	49%	32%	3%	5%
I usually take my medication anytime so long they finish their daily dosage	51%	40%	2%	5%
I usually hide the ART medicine away from home	55%	31%	4%	3%

Majority of the respondents agreed that ART consists of Drugs to cure HIV/AIDs (89%), ART consists of Drugs to Supress HIV/AIDs (90%), ART reduces the viral load (86%), there is no need for ART if the CD4 is above 500 (78 %) and lastly it was revealed that 92% of the respondents agreed that ART helps to prolong life. In addition, majority of the respondents agreed that ART is a waste of time (75%), taking ART is tiring (78%), one should not take ART when you feel sick (53%), taking ART is associated with stigma (64%) and finally taking ART without food will make someone become sick (67%). In regards to practices of HIV/AIDS patients on ART, majority of the respondents agreed that herbal medicine can be used as an alternative to ART (86%), forgetting to use protection during intimacy(91%), I rarely eat a balance diet when taking medication (81%), I rarely exercise when taking ART (85%), I usually share ART with other people who are HIV/AIDS (75%), Use of alcohol would interfere with ART absorption (75%), I usually take my medication anytime so long they finish their daily dosage (58%) and lastly, I usually hide the ART medicine away from home.

Multivariate Logistic Regression Analysis for knowledge, attitudes and practices of HIV/AIDS patients in association with anti-retroviral treatment failure.

A multivariate logistic regression was used to model relationship between all independent constructs and ART failure that was found significant in cross tabulation stage. Table 4 showed that an increase in knowledge statement that i do not need ART drugs if my CD4 count is above 500 by one unit leads to an increase in the odds of ART failure by 1.09. This relationship is significant as indicated by a p value of 0.008 which is less than the critical p-value (0.05). The results also indicate that an increase in attitude statement that ART is a waste of time by one unit leads to an increase in the odds of ART failure by 1.183 times. The relationship is significant as indicated by a p-value of 0.048.

In addition, the results revealed that an increase in the practice statement that i usually take my medication anytime so long they finish their daily dosage by one unit leads to an increase in the odds of ART treatment failure by 1.468 times. This relationship is significant as indicated by a calculated p-value of 0.007. Further, the results showed that an increase in adherence statement that being counseled about adherence before starting ART is important leads to a decrease in the odds of ART treatment failure by 1.413 times. This relationship is significant as indicated by a calculated p-value of 0.047. Finally the results indicated that an increase in the adherence statement that missing a dosage of ART would interfere with the treatment leads to a decrease in the odds of ART failure by 1.559. This relationship is significant as showed by a calculated p-value of 0.005.

Table 4
Overall multivariate Logistic Regression for ART failure

	B	S.E.	Wald	df	Sig.	Exp(B)95% C.I. for EXP(B)	Lower	Upper
Knowledge 1	0.076	0.138	0.304	1	0.581	1.079	0.823	1.414
knowledge 4	0.086	0.15	0.711	1	0.008	1.09	0.812	1.461
Attitude 5	0.168	0.146	5.332	1	0.048	1.183	0.889	1.573
Practice 3	-0.11	0.138	0.63	1	0.427	0.896	0.684	1.175
Practice 6	0.145	0.116	1.566	1	0.211	1.156	0.921	1.451
Practice 7	0.384	0.143	7.236	1	0.007	1.468	1.11	1.942
Ad 1	0.345	0.174	3.958	1	0.047	1.413	1.005	1.985
Ad 2	0.155	0.157	0.971	1	0.324	1.167	0.858	1.587
Ad 3	0.444	0.159	7.751	1	0.005	1.559	1.14	2.131
Constant	-6.443	1.429	20.333	1	0.000	0.002		

Variable(s) entered on step 1: Knowledge1, knowledge 4, Attitude 5, Practice3, Practice 6, Practice7, Ad1, Ad2, and Ad3.

DISCUSSION

Adherence to anti-retroviral therapy is critical for suppression of viral replication, reduced destruction of CD4 cells, prevention of viral resistance, promotion of immune reconstitution and slowed disease progression. Anti-retroviral adherence is the second strongest predictor of progression to AIDS and death, after CD4 cell count (20). Incomplete adherence to anti-retroviral therapy however is common in all groups of treated individuals. The average rate of adherence to anti-retroviral therapy is approximately 70%, despite the fact that long-term viral suppression requires near-perfect adherence (21). The study revealed that majority of the respondents agree that indeed being counseled about adherence before starting ART is important (96%), ART could cause side effects (92%), it is good to have someone to remind you to take your medication (97%) and finally missing a dosage of ART would interfere with the treatment (98%). The study revealed that the main reason why most respondents skip medication is because of stigma 81 percent, followed by pill burden at (78%), then side effects (75%), hospitalisation (71%), depression (69%), shared pills (67%), lack of food (54%), clinic accessibility (50%). Adherence is not only determinant of anti-retroviral therapy failure or success. Other factors include genetic differences in drug metabolism, severe baseline immune suppression, prior drug resistance, and concurrent opportunistic infections. Adherence to anti-retroviral therapy however, is one of the few potentially alterable factors determining outcomes for patient with HIV. Knowledge about HIV / AIDS has been identified as a powerful tool to prevent the transmission of this disease. Unfortunately, this knowledge about the disease has not resulted in appreciable changes in attitudes or in behaviour modifications in the population (22). The study revealed that majority of the respondents agreed that ART consists of Drugs to cure HIV / AIDs (89%), ART consists of Drugs to Supress HIV / AIDs (90%), ART reduces the viral load (86%), There is no need for ART if the CD4 is above 500 (78%) and finally it was revealed that 92% of the respondents agreed that ART helps to prolong life. In addition, respondents had different attitudes with regard to antiretroviral therapy; majority of the respondents agreed that ART is a waste of time (75%), taking ART is tiring (78%), one should take ART only when you feel sick (53%), taking ART is associated with stigma (64%) and finally taking ART without food will make someone become sick (67%). Different practices reported among the respondents. For example, the study revealed that majority of the respondents agreed that herbal medicine can be used as an alternative to ART (86%), taking ART can cause side effects (91%), one should stop taking ART if taking other medicine (81%), one can share medication with other ART patients (85%),

one does not need ART if they do not have AIDs (75%), use of Alcohol interferes with ART absorption (75%), one can take medication anytime as long as they finish their dosage (58%).

In conclusion, based on the results from overall multivariate logistic regression, the study concluded that poor knowledge on ART treatment leads to an increase in the ART treatment failure. In addition the study concluded that poor attitude on the usage of ART and poor adherence practices, translate to high ART treatment failure. The study therefore recommends an urgent need to educate HIV / AIDS patients concerning antiretroviral therapy and good adherence practices.

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