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Original Research Article

Determinants of Adherence to Anti Retroviral Therapy among Adults Living with HIV in Urban Low Income Settings: A Case of Kayole Division in Nairobi County, Kenya

Olive Gaceri Muthamia[1], Peter Maina Chege[2]

[1]Mount Kenya University, [2]Kenyatta University, Kenya.

Corresponding Author: Muthamia OG

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ABSTRACT

In Kenya, antiretroviral therapy (ART) is one of the major components of HIV management. Optimal adherence to ART strongly influences its effectiveness. Non-adherence has been associated with drug resistance, virologic failure and mortality. Minimal information exists on factors affecting adherence to ART treatment among adults in urban low income settings. This study aimed to establish the determinants of adherence to antiretroviral therapy among adults in urban low income settings of Nairobi, Kenya. A cross-sectional analytical design was adopted. A comprehensive sample of 107 adults on ART and attending Kayole health center was used. The researcher administered questionnaires and focus group discussion (FGD) guides which had been pretested and assessed for validity and reliability in data collection. Self reporting and pill counting methods were done to determine the adherence. Ethical permits were obtained and research protocols observed. Data were analyzed using SPSS for frequencies, means and relationships. The study established that 24.3% of the respondents were ART non-adherence. Majority (54.2%) collected drug refills on scheduled dates, while 21.6 % and 25.2% collected drug refills before and after the scheduled date respectively. The main reasons for non-adherence were stigma (53.8%), lack of information on importance of adherence (30.8%), being away from home (26.9%), drug stock outs (23.1%), lack of food (15.4%), forgetfulness (15.4%), feeling healthy (7.7%) and influence by others (7.7%), number of times taking ART in a day. Holistic support to persons on ART is needed in enhancing adherence. Targeted adherence support strategies should be initiated and supported for sustainability.

Key words: Anti retroviral treatment, human immunodeficiency virus, adherence, low income setting

INTRODUCTION

The human immunodeficiency virus (HIV) is the etiologic agent for the acquired immunodeficiency syndrome (AIDS). The HIV pandemic continues to have a pronounced global impact particularly among the world's resource limited settings.[1] Since the beginning of the HIV epidemic, almost 75 million people have been infected with the virus and about 36 million people have died. Globally, 35.3 million people were living with HIV by the end of 2012. [2] An estimated 0.8% of the total adults' population worldwide is living

with HIV.[3] Sub-Saharan Africa remains most severely affected. Almost 10 million people living with HIV and Aids had access to Antiretroviral Therapy (ART) in low and middle income countries by 2012. The uptake of ART increased by 7% from the year 2011 to 2012. [4]

A key impact of the HIV epidemic is the increased number of orphans and vulnerable Children (OVCs) resulting from AIDS related mortality over the years. [5] HIV has also impacted significantly upon the education sector, labour and productivity and life expectancy. [3]

Estimated ART coverage in low and middle income countries increased from 53% in 2011 to 61% in 2012. In Kenya more women (57%) are living with HIV than men (43%). [5] About 80% to 90% of the PLHIV are adults. HIV prevalence is higher among the general population in urban areas than those in rural areas. [6] Stigma and discrimination is a key obstacle to the uptake of HIV services. [5]

ART is one components of the comprehensive care for People living with HIV (PLHIV). [5] The management of HIV has changed substantially with the availability of newer, more potent and less toxic antiretroviral therapy. In Kenya, ART is now recommended for all PLWHAs regardless of their viral load or CD4 count. [7] Though the use of ART has been accompanied with the emergence of chronic non-communicable diseases, with proper use of ART, HIV infection is a manageable disease, with reduced mortality. [8]

Adherence to antiretroviral treatment is defined as taking 95% or more of the prescribed doses on time and in the correct way, while observing any dietary or fluid restrictions. [9] Adherence to antiretroviral treatment is very key to slowing down the suppression of virus, destruction of CD_4 cells, viral resistance and disease progression while strengthening the immune system. Strict adherence to ART is elemental to sustained HIV suppression, improved overall health, quality of life and survival. [10,11]

Low adherence to ART is associated with drug resistance and progression to AIDS. [12] Some studies have indicated that most people taking medication are non-adherent at some point of time either intentional or non-intentional. [13] According to Horne, [14] non-intentional non-adherence is linked to limitations in resources that reduce the ability to adhere to the treatment as intended. Intentional non-adherence is the product of a decision informed by beliefs, emotions and preferences. Malnutrition and dietary factors are among risk factors for ART non-adherence. [15] Nutrition and food interventions have also been revealed to improve the adherence to ART. [16-18]

There is scarce information on the factors that influence adherence to ART treatment among PLHIV especially in low income settings in urban Kenya. This research aimed to assess the factors that influence adherence to ART among PLHIV in low income settings in Kayole division, Nairobi, Kenya.

MATERIALS AND METHODS

This study adopted a cross –sectional analytical design to describe the determinants of adherence to antiretroviral treatment among adults living with HIV in urban low income setting. The sample comprised of a compressive sample of 107 purposively selected adults; both male and female who were on ART. The study was conducted in Kayole division, which is one of the areas where populations live under low economic status as they earn an average of less than $2.5 per day. Participants were selected from Kayole health Centre. All the PLHIV who were bed ridden were excluded from the study. A researcher administered questionnaire and guided focus group

discussions (FGDS) guides which were pretested and assessed for validity and reliability. Ethical permits were obtained and protocols for research in Kenya were observed. The methods used to determine adherence were self report and pill counting. The respondents were to recall the number of times they had not taken the antiretroviral drugs 30 days preceding the study. A count of the pills available was also done to determine the number of doses missed through the month. The study also captured whether the dosage was to be taken once, twice or three times in a day. The respondents also highlighted any distinct factors that contributed to their non-adherence.

Statistical methods

To capture all this information a modified Morisky medication adherence scale was used. Data was further analyzed to scale the factors that influence adherence. To establish the rate of adherence, data was analyzed based on the number of times a patient is scheduled to take drugs per day. When a patient is taking treatment once a day, 95% adherence meant missing no more than one dose a month. If a patient was taking treatment twice a day, 95% adherence meant missing no more than three doses a month. If a patient was taking treatment three times a day, 95% adherence meant missing no more than four doses a month. [19-21] Data were analyzed using SPSS Version 16 for descriptive statistics, frequencies and relationships between variables. Relationship between categorical variables was done using chi-square while those from non-categorical variables were done using Pearson correlation.

RESULTS

Respondents' characteristics

The results show that majority of the 107 respondents were female (62%) compared to male that was at 37%. The mean age for all respondents was 33.4±9.5. The age group most affected was aged between 31-45 years with 51% of the respondents, followed by those aged 18-30 years and more than 45 years respectively (41.1% and 7.5%).

Majority of the respondents (41%) were married while the rest were single, separated, divorced or widowed (24.3%, 18.7%, 11.2% and 4.7 %), respectively. Majority of the respondents (61.7%) were earning less than 2.5 dollars in a day while about 11.2% were earning less than $1.25 a day. The rest (38.2%) were earning more than $2.5a day. The main sources of income in the study population were casual labour (34.6%) and self employment (32.7%) with about two thirds of the respondents. Other sources of income included formal employment (15%), friends and relatives (15.9%) and pension (1.9%). At least 86.9% of the respondents had secondary education as the highest level of education. Those who had not attended school and with primary education were 1.9% and 13.1%, respectively.

Drug collection schedule

Table 1: Schedule for collection of antiretroviral treatment by respondents

	n	Percent	Reasons for time of schedule
Once a week	3	2.8	With side effects
Once in two weeks	12	11.2	On monitoring after side effects, Initial dose (monitoring)
Once a month	63	58.9	Adherence observed but still need for monitoring
Over one month	27	25.2	Adherence observed for a long period of time and no side effects
Total	107	100	

The study established that majority of the respondents (86.9%) collected drug refills as scheduled. From focus group discussion, it was established that the interval between the scheduled drug collection times varied from patient to patient. This was determined by the degree

of adherence observed by health workers, any side effects observed in the previous visits and initiation of drugs or change of drug regimen. Majority (58.9%) were scheduled to collect the ART refills once a month as shown in Table 1.

Drug refill practices by HIV patients

The study ascertained that majority of the respondents (60.7%) picked their drugs from hospital timely as scheduled. The rest of the respondents either collected the drugs after (24.3%) or before (15.0%) the scheduled time as presented in Table 2. The respondents had various reasons for not collecting the drugs timely as scheduled. These were; being away from home on the scheduled date (30.8%), forgetting the appointment date and only remembering after the supply is exhausted (19.2%), permission not granted at the place of work (15.4%), too busy in the place of work (15.4%), lack of transport on the scheduled refill date amidst inability to walk (11.5%) and feeling very sick (7.7%).

Table 2: Antiretroviral treatment refills and factors contributing to early or late collection

When collected	**n=107**	**Percent**
Timely collection	65	60.7
Before or after appointment date	42	39.3
Total	**107**	**100**
When collected	**n=42**	**Percent**
After appointment date	26	61.9
Before the appointment date	16	38.1
Total	**42**	**100**
Reason for collecting after appointment date	**n=26**	**Percent**
Had travelled/was away	8	30.8
Forgot the date	5	19.2
No permission from work place on the scheduled date	4	15.4
Too busy/work load	4	15.4
No transport on the scheduled date	3	11.5
Very sick on the scheduled date	2	7.7
Total	**26**	**100**
Reason for collecting before the appointment date	**n=16**	**Percent**
The only time available from work	10	38.5
Proposed travelling during the scheduled refill date	6	23.1
Total	**16**	**100**

Status of disclosure and adherence to the ART by the respondents

Results show that 86.0% of the respondents had disclosed their status to someone close to them. They either disclosed to family members (54.3%), friends (30.4%) or workmates (15.2%) as in Table 3.

Table 3: Disclosure status and family support to the respondent

		n	**Percent**
Disclosure of status	Yes	92	86.0
	No	15	14.0
	Total	107	100
Whom they disclosed to		n	Percent
Disclose to Family		50	54.3
Disclose to Friends		28	30.4
Disclose in workplace		14	15.2
	Total	92	100
Receive family support		n	Percent
	Yes	32	64.0
	No	18	36.0
	Total	50	100

The study showed that majority (64.0%) of those who had disclosed their status to their family members, received family support in the ART treatment and had a better adherence. About 70% of those who received family support are those whose family members even accompanied them to the health facility for counseling. In this case they acted as reminders.

Drug adherence by the respondents

The study established that majority of the respondents (75.7%) adhered to the drugs as scheduled It was established that ART drugs are taken either once, twice or three times in a day depending on individual prescriptions. Majority of the respondents (46.2%) who did not adhere to the treatment had ART drug prescription of three times daily. The rest of the non adherence had a prescription of two times (30.8%) or once (23%) only.

Factor affecting adherence of drugs schedule

The factors that influence a patient's ability to adhere to drugs were identified to

be numerous and intricate. Generally men had a higher adherence (81.6%) compared to the women (67.5%). The list of reasons highlighted for non adherence included stigma to carry drug and take when away from home (53.8%), lack of information on importance of adherence (30.8%), being away from home (26.9%), drug stock outs (23.1%), lack of food (15.4%), forgetfulness (15.4%), feeling well and healthy (7.7%) and influence by others (7.7%).

Presence and causes of stigma among respondents

About 67.3% of the respondents indicated to have stigma as a result of their HIV status. The study further established the main causes of stigma in HIV as perceived by the society. This was mainly the attitude of the community members (38.9%), health workers (27.8%), friends (18.1%), other relatives (20.8%) and immediate family members (17.7%). However, 6.9% was due to personal feeling of condemnation and reproach.

Relationship between ART adherence and selected factors

The study showed that there was no significant relationship ($p > 0.05$) between ART adherence and age, gender, marital status and education level of the respondent. The study further showed that there was a relationship ($p < 0.05$) between adherence and occupation, income, disclosure of status, support by family member and stigma as presented in Table 4.

Table 4: Relationship between antiretroviral treatment adherence and selected study variables

Study Variables	Adherence (Yes/No)
Age	P= 0.057
Gender	P= 0.056
Marital status	P= 0.055
Education level	P= 0.042
Occupation	P= 0.043
Income	P= 0.038
Disclosure of status	P= 0.042
Support by family members	P= 0.040
Stigma	P= 0.035

DISCUSSION

The prevalence of HIV is higher among women and respondents of age group 30-45 years. Women especially in low income settings are at risk due to gender inequalities and gender based abuse and violence. Most of them may lack the capacity to protect themselves from HIV. The age of 30-45years represent the active years of life where family demands increase and this can also lead to sexual activities as a source of income. This study shows similarities in the general population where more females are living with HIV/AIDS compared to males and HIV prevalence being high among age group of 30-45 years (UNGASS, 2014). In 2009, HIV prevalence was at 8% among women and 4% among men of age 15- 49 years. The peak prevalence among women was among women aged 40-44 years (14%), while prevalence among men was highest at age 35-39 (10%). [6]

As majority of the respondents are earning below $2.5 dollars in a day, this affects ART adherence as priorities are shifted from paying for transportation to the clinic for refills to meeting the basic needs of the family. This is worsened by increased prices of essential commodities and the limited income. Majority depend on casual labour and self employment as the source of income. Food availability is also limited and this affects drug intake especially where food intake is a requirement for optimal ART adherence. Our study relates to a study by World Bank which shows that almost half of the population lives on less than $2.5 per day and 12% live below the poverty line of 1.25 dollars a day. [22] With the main sources of income being casual labour and self employment it is a clear indication that there was no constant income for most of the respondents. A study by Hailasillassie [23] was consistent with our study as it showed relationship between income and ART

adherence. According to WHO, [11] economic status also influences ART adherence.

This study clearly establishes that the adherence rate increases as the number times one is taking drugs reduced in a day. This study conforms to other studies which have established that those taking ART once daily had the highest adherence. [24-28] This is because the patient identifies a time of the day (either morning or evening) that they are certain of being at home or a place that is suitable for them to take drugs. Maintaining optimal adherence among respondents taking ART treatment two times and three times a day had its challenges as most of the respondents were working away from home. Other studies have also shown that being away can affect adherence to ART. [29,30]

The disclosure of status to family members and family support influenced the adherence to drugs and thus the significant relationship. Family support and disclosure of the status in any medication improves the adherence to drugs. Members of the family, especially those who attend the adherence counseling provide support in ensuring adherence. Other studies have confirmed that the disclosure of status and treatment support influence the drug adherence. [31-33] Lack of disclosure at the work place was noted as the reason for lack of permission to collect the refills especially when the patient's frequency of absenteeism was high.

The study also established that that when a member in the family attends the adherence counseling sessions together with the patient, stigma is reduced, psychosocial status and adherence of the patient is improved. Other studies on ART were consistent with the findings of our study. [11,34-36] Further, this study established that patients who received support from family members and friends had a better adherence compared to those who did not have any support. These findings were consistent with other studies. [34,37-41] Disclosure of one's HIV status especially to the family members and close friends has positive outcomes in the long term. The members of the family and friends can also address any issues that would contribute to non adherence.

Practice of untimely collection of drugs has a direct implication on the adherence. This study identified many reasons as causes of non-adherence. These were either directly affecting the drug adherence schedule or indirectly by affecting the drug refill collection from the health centre. These included stigma, forgetfulness, lack of transport to collect drugs, drug being out stock, being busy, lack of information on the importance of adherence, being away from home, lack of food, influences from friends, feeling unwell or feeling well and healthy. Other studies have shown that being away from home, being busy, forgetting and food availability is the main hurdles to ART. [30,42-46] Other studies have also established that patients who are on ART may find it difficult to take drugs in public and carry them when away from home thus affecting the adherence, lack of transport fare, drug out of stock, lack of support, busy and non disclosure as the main causes of non-adherence. [30,31,47-49]

The study also established that stock out at the facility can also affect adherence by the patient. This affects adherence by denying access to the drugs. Other studies have also revealed that inconsistent access to medications affects the adherence to ART. [32,33] Lack of information on ART was an obstacle to ART treatment. The patient-provider relationship also affected the uptake of adherence information and the implementation. Altice [50] indicated that it is important for health workers to support the enhancing of patients confidence. To achieve this, they need to create a trusting patient-provider bond and upholding good

communication as it helps improve adherence and long-term outcomes.

As majority of the respondents were self employed, this meant that the daily income was dependent on the effort they put in their businesses. If the drug refills collection days coincided with peak business seasons, they would skip the drug collection so as to take advantage of the season. Gender did not influence adherence to ART adherence in our study. These findings allied with findings of other studies. [30,51-53] Marital status did not influence ART adherence in this study. Other studies consistent to these results were by Talam [30] in Kenya and Weiser [53] in Botswana.

CONCLUSION

Despite the fact that ART has significant benefits to PLHIV, adherence may be affected by many factors that consequently affect the quality of life. The study noted that some respondents did not follow the drug schedule strictly. They either took the drugs before or after the scheduled time. They either missed or took in the wrong hours, either after short intervals or long intervals. Some further missed the drugs on some schedules completely. The main reasons highlighted for this were forgetfulness, busy, lack of drugs mainly due to not collecting drugs on time, travelling or being away from home, stigma making one collect and take drugs only when alone and further not carrying the drugs when away from home, lack of transport fare to collect drugs, food availability as the respondents feared to take drugs without food especially those indicated to be taken with food, influence by friends, patient provider relationship and income. Other reasons were; lack of information on the effect of not adhering and number of times one was taking the drugs in a day. To address these there is need of establishing holistic support tailored towards enhancing adherence to persons on ART. Targeted adherence support strategies should be initiated and supported for sustainability especially in low income settings.

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