



Adherence to Antiretroviral Therapy among People Living With HIV and AIDS in the Limbe Health District, Cameroon

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ABSTRACT

Background: In Cameroon and Africa at large, adherence to antiretroviral therapy (ART) which is very important in viral suppression and prolonging life has been clamoured by many health campaigns. Sometimes, the word adherence in itself means differently to different people expected to take their antiretroviral medications, failure of which deteriorates their health. The objective of this study was to, determine the level of adherence to ART among HIV/AIDS patients on ART in Limbe Health District, Cameroon and assess other factors responsible for non-adherence. **Methods:** A cross-sectional design with a sample size of 389 was used. Interviewer- administered questionnaire was used to collect data from HIV and AIDS patients belonging to HIV support groups in Limbe Health District and who were initiated on ART at the HIV treatment centre of the Limbe Regional Hospital. Data was collected on socio-demographic characteristics of respondents, adherence to ART and other factors associated to non-adherence. Data was analyzed using STATA version 7.0. **Results:** Full adherence was experienced by 71% of the respondents. The main reasons given for non-adherence were “away from home without drugs, forgetfulness, wanting to avoid side effects, and not wanting others to notice”. This was related to some form of stigmatization. **Conclusion:** People living with HIV/AIDS (PLWHA) belonging to HIV support groups in LHD will adhere to therapy if alert systems are in place and community accepts the illness as normal and avoid stigmatization.

Key words: HIV/AIDS, anti-retroviral therapy, adherence and reasons for non adherence

INTRODUCTION

Access to anti-retroviral therapy (ART) continues to expand in Cameroon and presently there are about 150 ART clinics in Cameroon. By 2000 there existed no treatment for HIV-infected patients in Cameroon meanwhile there were 50,000 PLWHA[1]. From 2002 to 2005, most PLWHA paid for their ART but in October 2004, there was a substantial drop in the cost of ART and average monthly cost of ART dropped more than 100-fold[2]. In 2007, ART was provided free of charge in Cameroon and 46,000 (25%) of the eligible 180,000 HIV-infected patients were on treatment. In 2010, about 41 % of the estimated 217,000 PLWHA had access to ART, and it was projected that by 2020, more than 80% would be provided free ART[1]. However given the free availability of ART in Cameroon, the rate of new infections and mortality from HIV are still on the rise in Cameroon as indicated by the statistics above, and this poses a great worry in the minds of Cameroonians, who will sometimes state “*In order to reduce the viral load*

and prevent the development of drug resistance, strict adherence to therapy is very important. However, patients do not return for follow-up on schedule or fail to take their medication as prescribed thereby leading to treatment failure”.

Adherence to anti-retroviral therapy (ART):

With the use of anti-retroviral therapy, HIV has been transformed from a deadly disease to a chronic manageable disease. Recently there has been a dramatic increase in the number of HIV/AIDS patients on ART in Sub Saharan Africa, from just 100,000 people in 2003 to about 3.9 million people in 2009, with close to 40% of patients on ART provided free of charge[3]. However by 2009, Botswana and Rwanda were the first countries in Sub Saharan Africa to achieve universal access target (treatment coverage of 80% or more of patients in need of treatment). More so, countries such as Namibia, Senegal and Ethiopia are moving towards universal target, having achieved ART coverage between 50-80%[3]. Providing patients with free ART enhances their wellbeing, reduce the

number of opportunistic infections and enables them to live productive lives if only these drugs are taken as prescribed[4].

Cameroon is among the countries in West and Central Africa with one of the highest rates of HIV infection, with 4.1% of the adult population living with HIV. Of this, only 41% are receiving ART[1]. Since 2007, ART has been provided for free in Cameroon, leading to many patients being initiated on HIV treatment. Adherence to ART in Cameroon has been measured using pharmacy refill data, self-report, CD4 cell counts and attendance at scheduled visits. These methods have shown adherence rate varying from 10.1% to 97.5% between 2000 to 2010[5].

Unlike other chronic diseases, HIV requires strict adherence to medication in order to reduce viral load and increase CD4 counts[6]. Strict adherence to ART is very important for PLWHA to be able to maintain continued HIV suppression, reduced risk of drug resistance, improved their overall health, quality of life and survival; and also reduce the risk of HIV transmission [7] Even though ART is not a cure for AIDS and also have many side effects, they are very important in improving the quality of life and enhancing the productivity of PLWHA who are placed on this life-serving medication[8]. Proper adherence to ARVs also drastically reduces morbidity and mortality due to AIDS. A reduction in viral load due to ARVs also reduces mother-to-child transmission rates[9].

Defining and measuring adherence:

Adherence can be defined as the “extent to which patients take medications as prescribed by their health care provider”... or as the “extent to which a person’s behavior: taking medication, following a diet , or executing lifestyle changes corresponds with agreed recommendations from a health care provider”[5]. The World Health Organization (WHO) goes further to define adherence as “taking all medications in the correctly prescribed doses, at the right time, and in the right way”[10]. Complete suppression of the viral load requires 100% or perfect adherence which is very difficult to achieve, and on the other hand, adherence levels less than 95% is associated with treatment failure[11].

The adherence measuring tools like Medical Event Monitoring System (MEMS) is used mostly in developed countries because they are expensive to use[5], though there are strengths and weaknesses. The MEMS is a “pill-cap that contains an electronic device that record the date and time of each bottle-opening”[12]. It has been shown that MEMS is more objective since it is designed to collect detail data on a day-to-day basis about the intake of the drug and over a long period of time. The drawback in using MEMS in resource limited countries is that it is expensive[12] and often used

mainly for research purpose[7]. Self-report data or questionnaire together with the other methods mentioned above are commonly used in resource limited settings because they are less costly and easy to use but are not very objective[10]. Self-report data result has been shown to be correlated with viral load response to ARVs of the participants and is generally identified as a good indicator of adherence. However, self-report data has been criticized by researchers for lacking accuracy and precision since the patient can have recall bias and social desirability. This can sometimes lead to either over estimation or under estimation of adherence[13]. Factors influencing adherence are abundant and are generally grouped into a number of categories by researchers. They include patient related factors, medication related factors, health care provider related factors[4], social factors, and economic factors[14].

Statement of Problem:

Medications are often unpleasant. Having to take medication over a long period of time is much more unpleasant. Antiretroviral medications are not different. Hence adherence could be problematic. Non adherence increases risk of deterioration. Hence identifying reasons for non adherence among populations underscores the importance of such surveys.

Survey questions:

1. What is the extent of adherence to ART among HIV patients who were members of HIV support groups in Limbe Health District?
2. What other factors influenced adherence to ART among PLWHA who were members of HIV support groups in Limbe Health District?

Objectives:

1. Determine the level of adherence to ART among PLWHA who were members of HIV support groups in Limbe Health District.
2. Identify factors and reasons for missed doses of ART among PLWHA who were members of HIV support groups in Limbe Health District.

MATERIALS AND METHODS

A descriptive cross-sectional and analytical study was used. The cross-sectional design was used because information was collected in one go and there was no follow up of the participants. The survey site was the Limbe Health District (LHD) among PLWHA who were on antiretroviral therapy. Eligible participants were HIV and AIDS patients who were initiated on antiretroviral therapy and were members of HIV support groups.

The study target population was made up of PLWHA, aged 21 years and above, who were initiated on ART at the Limbe Regional Hospital

and were members of HIV support groups in Limbe Health District, Cameroon. Sample and sampling technique used was a non-probability convenient in which nobody was skipped, rather the eligible participants who were available and accepted to take part in the survey by signing the consent form were interviewed. This process continued until the sample size was reached. A standard structured interviewer administered questionnaire was used to collect data. For inclusion criteria, adult male and female, who were HIV positive, aged 21 years and above; PLWHA who either lived in Limbe Health District or out of it but belong to HIV support groups in LHD and also received their ART at the Limbe Regional Hospital, and patients on ART for at least six months. For exclusion were patients on ART who were less than 21 years; HIV patients who had not been initiated to ART, and Patients on ART but very sick, and who were physically or mentally unable to complete the questionnaire. The sample size for this survey was calculated using a formula for estimating a single population proportion for a cross-sectional study of an infinite population. Since the proportion of adherence to ART in Limbe Health District and Cameroon in general is not certain, the following assumption was used:

Proportion of adherence to ART of 50 % at 95% confidence level and with margin of error of 5 % was used. A sample size of 384 was estimated using the formula below:

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where n = sample size

z = is the standard deviation in normal life which becomes 1.96, using a 95 % confidence interval

p = assumed proportion of adherence to ART of 50 % = 0.5

d = margin of error tolerated at 5% = 0.05

Computing in the formula gave:

$$n = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2} \quad n = 384$$

Administrative and ethical approval was sought from the Institutional Review Board (IRB) of the Faculty of Health Sciences of the University of Buea. Administrative clearance was obtained from the Regional Delegate of Public Health in Buea before proceeding to the Limbe Health District where the study was conducted. Permission was obtained from the District Medical Officer of Limbe Health District and from the Director of the Limbe

Regional Hospital in order to interview members of HIV support groups that meet within the hospital premises. Permission was also obtained from members of support groups. For participants, an informed consent was obtained. A pretest of the questionnaire was conducted with HIV/AIDS patients on ART out of Limbe Health District. The questionnaire was made up of three sections representing the socio-demographic data and the two objectives of the survey. During data collection HIV support groups were visited during their meeting days. After explaining the survey and its purpose, informed consent was sought individually from members before administering the questionnaire.

Simple descriptive statistics like frequency, mean and median was then used to describe the occurrences. Bi-variate analysis and multivariate regression analysis were done on sex, age, marital status, employment status, education level and also on distance to treatment centre to assess how socio-demographic characteristics were associated with medication adherence.

Bi-variate analysis were done using chi-square and Fisher's exact test at 95% confidence interval (CI). Uni-variate analysis was used to assess other factors responsible for non-adherence.

Ethical issues were addressed. Participation in the survey was voluntary and participants could opt out of the study at any moment. Written informed consent was obtained from all participants prior to administration of the questionnaire, only after the study had been explained to them. Confidentiality was ensured as the questionnaire was answered anonymously. The data collected was stored in a computer with a password and unauthorized individuals were not allowed access to it. No harmful procedures were used during the study and the findings were used strictly for the study's purpose and would be published.

Results:

Adherence to antiretroviral therapy Experience of optimal or strict adherence:

In this survey, optimal or strict or 100% adherence was achieved when a client has not skipped any prescribed drugs during the previous seven days before interview. Result shows that 71% of respondents were fully adherent to their drug regimen as depicted by Figure 7.

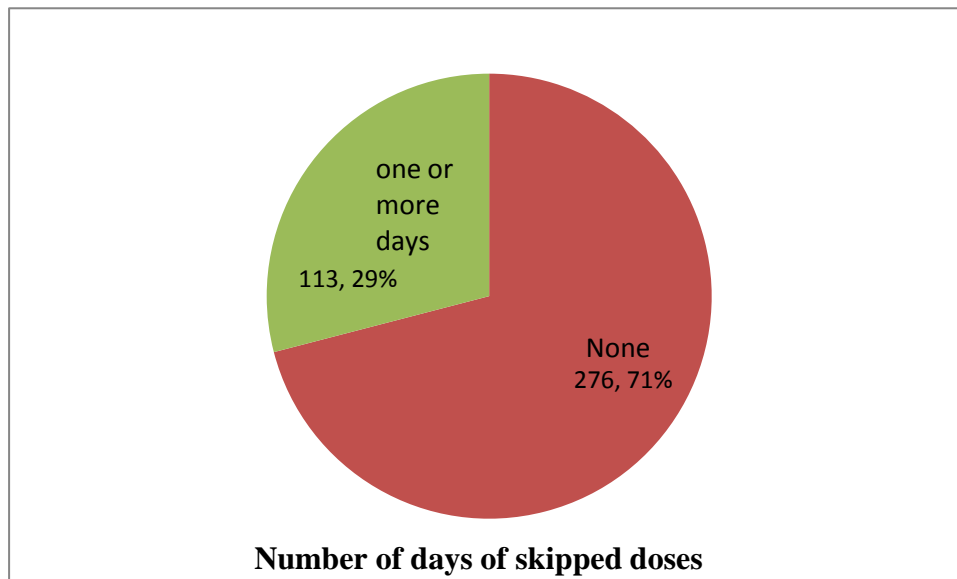


Fig. 1: Distribution of respondents according to number of days of skipped doses.

a) Respect of medication schedule:

Regarding the respect of time schedule of medication, 63.24% (n= 246) admitted they followed their medication schedule all the times; 30.59% (n= 119) did so most of the time; while 6.17% (n= 24) followed it some of the time.

b) Respect of medication instructions:

Most ART medications have special instructions such as “take with food” or “on an empty stomach” or “with plenty of water”. Two hundred and ninety (74.55%) respondents admitted that their medications had such instructions, while 99 (25.45%) had no instructions. However, only 35.59% respondents followed those instructions all the time, while 49.49% followed most of the time and 14.92% did so only some of the time.

c) Adherence during weekends:

Weekends are periods of many commitments and movements. Respondents were also asked if they missed their pills on the weekend days prior to the interview. As many as 10.54% (n=41) missed their pills while 89.46% (n= 348) took all their medications.

d) Other factors were also assessed which could affect or actually affected adherence. As a result, only 77.38% (n= 301) of respondents admitted that their spouse or sexual partner knew about their HIV seropositive status; 8.48% (n= 33) admitted they had difficulties taking their HIV pills in the presence of a family member; while 28.02% (n= 109) had difficulties taking their medications in the presence of a community member. Regrettably, 5.66% (n= 22) had missed a dose sometime because they did not want someone to find out they were HIV positive. Also 14.47% admitted that their spouses were not aware that they were taking ART.

Association of adherence with socio-demographic characteristics:

Apart from level of education, adherence to ART was not statistically associated with participants’ socio-demographic characteristics. Result reveals that females (73.70%) were more adherent than males (64.71%).

The unmarried were more adherent (75.73%), closely followed by the divorced (75%), the married (69.17%) and the widowed (57.14%). Concerning religion, 44.44% of respondents without a religion, 71.54% of Christians and 75% of Muslims were adherent to their medication.

There was almost no difference regarding adherence and place of residence as 70.99% of respondents living in LHD and 70.77% of those living out of LHD were adherent to their ART.

The relationship between adherence and level of education was statistically significant (P-value 0.0012) and adherence increased as the level of education increases. As such, 47.62% of respondents with no formal education, 66.67% with primary education, 73.33% with secondary education and 87.5% with tertiary education were adherent to their ART.

Comparing respondents with primary education to those without formal education, primary school leavers were 0.45 times as likely as non-literates to be adherent to their medication.

Comparing respondents with secondary education to those with no formal education, participants with secondary education were 0.33 times as likely to be adherent to therapy as those without formal education.

Also respondents with tertiary education were 0.13 times as likely to be adherent to therapy as participants without formal education. Multiple

logistic regression controlling for sex, marital status, and religion which showed a weak association with adherence (P-value < 0.25), indicated that respondents who attended primary level of education were 0.44 times as likely to be adherent to therapy as those without formal education. Also respondents with secondary education were 0.30 times as likely to be adherent as participants with no formal education.

Likewise respondents with tertiary education were 0.11 times as likely to be adherent to ART as those without formal education.

The relationship between adherence and occupational status revealed that 68.21% of unemployed and 72.69% of employed respondents were adherent to their medication. This is depicted by Table 1.

Table 1: Association of adherence with socio-demographic characteristics

Variable	No (N, %)	Yes (N, %)	P-Value	OR	aOR	P-Value	95% CI
Sex			0.072				
Females	71(26.30)	199(73.70)					
Males	42(35.29)	77 (64.71)					
Marital status			0.2277				
Unmarried	25(24.27)	78 (75.73)					
Married	74(30.83)	166(69.17)					
Divorced	8 (25.00)	24 (75.00)					
Widowed	6 (42.86)	8 (57.14)					
Level of education			0.0012				
None	11(52.38)	10 (47.62)		ref			
Primary	42(33.33)	84 (66.67)		0.45	0.44	0.084	0.17-1.12
Secondary	56(26.67)	154(73.33)		0.33	0.30	0.100	0.12- 0.76
Tertiary	4 (12.50)	28 (87.50)		0.13	0.11	0.002	0.03- 0.42
Age bracket			0.7323				
21 – 30 years	11(24.44)	34 (75.56)					
31 – 40 years	45(27.44)	119(72.56)					
41 – 50 years	41(32.03)	87(67.97)					
>50 years	16(30.77)	36(69.23)					
Religion			0.2068				
None	5 (55.56)	4 (44.44)					
Christians	107(28.46)	269(71.54)					
Muslims	1 (25.00)	3(75.00)					
Residence			0.972				
Out of LHD	19(29.23)	46(70.77)					
LHD	94(29.01)	230(70.99)					
Occupation			0.343				
Unemployed	48(31.79)	103(68.21)					
Employed	65 (27.31)	137(72.69)					

Association of stigma with adherence:

The association of ART adherence with self-stigma showed that respondents who experienced self-stigma were more adherent (71.16%, n= 264) than those (66.67%) who experienced no self-stigma. This association was statistically not significant (P-value 0.682).

On the contrary, respondents who experienced external stigma were less adherent (68.81%) to their medication compared to respondents who did not experience external stigma (71.58%). This association was not also statistically significant (P-value 0.589) as shown by Table 6

Table 2: Association of ART adherence with internalized and external stigma as a factor Medication adherence

	Adherent		Non adherent		P-value
	N	%	N	%	
Self-Stigma					
No stigma	12	66.67	6	33.33	0.682
Experienced stigma	264	71.16	107	28.84	
External stigma					
No stigma	199	71.58	79	28.42	0.589
Experienced stigma	75	68.81	34	31.19	

The association between overall stigma and medication adherence was not also statistically significant (P-value 0.889). However respondents who did not experience overall stigma were more

adherent to their medication (76.9%) compared to those who experienced overall stigma (71.01%).

Reasons for missed doses or non-adherence to ART:

In order to find out the reasons for non-adherence, a range of multiple-choice questions were asked why respondents missed their medications (as indicated above) during the past seven days or the last weekend or one month prior to administration of the interview. The following reasons were given by the respondents:

- ❖ Were away from home 16.97% (n= 66)
- ❖ Simply forgot 14.14% (n= 55)
- ❖ Were busy with other things 13.11% (n= 51)
- ❖ Wanted to avoid side effects 3.60% (n= 14)
- ❖ Did not want others to notice 3.34% (n= 13)
- ❖ Fasting or attending ceremony such as a wedding or funeral 3.34% (n= 13)
- ❖ Fell sick or ill 3.08% (n= 12)
- ❖ You ran out of pills 2.57% (n= 10)
- ❖ Had too many pills to take 2.31% (n= 9)
- ❖ Felt depressed/overwhelmed 2.06% (n= 8)
- ❖ Not enough food to eat before taking drugs 1.80% (n= 7)
- ❖ Felt good and needed no medication 1.55% (n= 6)
- ❖ Too far from the treatment centre where I can get drug 1.29% (n= 5)

Discussion:

Majority of the respondents (71%) were completely adherent to their medications based on seven days recall. This high level of adherence could be attributed to the availability of ARVs at the distribution centre, continuous counseling with emphasis on the importance of strict adherence at the treatment centre and in HIV support groups. This adherent level however is not very encouraging because as many as 29% still observe sub-optimal adherence with the resulting repercussions on their health. This result is in conformity with the review of Ayalu and colleagues [3] who indicate that majority of the studies in developing countries report adherence levels of about 75%. Our finding does not corroborate with the finding of another study carried out in Cameroon by Kouanfack et al [15] which compared blood monitoring using nevirapine and self-report giving very high level of adherence of 87% for blood monitoring and 97.5% for the latter. This high level of adherence was criticized by Mbuagbaw et al [5] that it was a drug trial and participants received free ARVs at a time when it cost 51.2 USD/month in Cameroon. However, if other majors of adherence are taken into consideration, the adherence level in Limbe Health District will certainly drop as only 63.24% of the respondents respected their medical schedule, and only 35.59% respected medical instructions such as “take with food or with plenty of water” as

noted earlier. The association of adherence with socio-demographic variables reveals that level of education was statistically associated with adherence. Adherence increased as level of education increased and respondents with tertiary education were more adherent (87.5%) than those without formal education (47.62%). A study in Kenya [16] reported similarly that HIV patients who were more educated were more adherent as they read their medication leaflet to supplement with the information provided during counseling sessions. This led to a better understanding of the medication regimen and consequently improved adherent.

In this survey the most cited reasons for missed doses which contributed to non-adherence were “away from home without medications, forgetfulness, busy with other things, wanting to avoid side effects and never wanting others to notice”. This finding is in consistent with many studies on adherence [14; 17; 18]. These multiple reasons for missing doses provide a clear illustration of the complexity of adherence not only to PLWHA on ART but also to policy makers in the domain of health care. Thus health care providers working in the domain of HIV should not target only a single cause for non-adherence but multiple causes as mentioned by the respondents. Unlike other chronic diseases, HIV requires strict adherence to medication in order to reduce viral load and increase CD4 counts. Strict adherence to therapy is very important for PLWHA to be able to maintain continued HIV suppression, reduced risk of drug resistance, improved their overall health, quality of life and survival; and also reduce the risk of HIV transmission.

Conclusion:

Reasons for sub-optimal adherence to ART included: being away from home without drugs, simply forgetting, being busy with other things, wanting to avoid side effects and not wanting others to notice and fasting.

Recommendations:

PLWHA initiated on ART to be carried out in Limbe Health District to better understand HIV stigma and adherence and how these have affected the patients.

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