FACTORS AFFECTING ANTIRETROVIRAL DRUG ADHERENCE AMONG HIV/AIDS ADULT PATIENTS ATTENDING HIV/AIDS CLINIC AT MOI TEACHING AND REFERRAL HOSPITAL, ELDORET, KENYA.

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Abstract

Objective: To determine important factors that affect antiretroviral drug adherence among HIV/AIDS male and female adult patients (18 years and above) attending Moi Teaching and Referral Hospital, Eldoret, Kenya.

Methods: A cross sectional study involving 384 HIV/AIDS adult patients attending Moi Teaching and Referral Hospital, Eldoret was conducted. These patients were on ARV drugs. They were investigated for factors that affected their drug adherence based on observing the timing of doses and keeping of clinic appointments for drug refills during the months of May, June and July 2005. Data were collected from the respondents using interviewer–administered questionnaires to patients and self-administered questionnaires by ten key informants (nurses and clinicians in charge of HIV/AIDS clinic) selected by purposive sampling. The key variables examined were demographic, other characteristics of the patients and adherence factors. Data were analysed using Statistical Package for Social Sciences (SPSS) version 10.0 for frequencies, cross-tabulations and Chi-Squared test and statistical significance set at $p<0.05$.

Results: Sixty-eight percent of the respondents on ARVs were females. 52.1% had secondary and post secondary education. They were aged between 18-63 years (mean age 36.1 ±8.5 years). Results showed that only 43.2% adhered to the prescribed time of taking drugs. The most commonly cited reasons for missing the prescribed dosing time by the patients were: Being away from home 68.8%, being too busy 58.9%, forgetting 49.0%, having too many medicines to take 32.6% and stigma attached to ARVs 28.9%. There was no significant difference between males and females based on timing of taking medications (χ^2= 2.9412, p = 0.0861). On the basis of keeping clinic appointments, all the respondents claimed to adhere to scheduled clinics. However, from hospital records, it was established that only 93.5% of the respondents kept clinic appointments. The most common reasons for poor adherence to clinic appointments were; Being away from home (50%), forgetting (50%), being too busy (50%), stigma (70%), feeling sick (80%) and changes in work routine (60%).

Conclusion: The key factors affecting adherence were; being away from home, being busy and forgetting. It was recommended that patients should be educated on the importance of strict adherence to the prescribed doses of ARVs as a suitable measure of intervention. Future research should explore multiple–target interventions to resolve the barriers to adherence.

Keywords: Adherence, antiretroviral drugs, factors of adherence, taking medication at prescribed times, keeping clinic appointments

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Introduction

About 22 million people have died from the HIV/AIDS worldwide since the beginning of the pandemic in the early 80s (1). The proportion of females infected is becoming increasingly significant, with 55% of the infection from Sub-Sahara Africa in 1999 being attributed to women (1). In Kenya, already more than 2 million people are estimated to have been infected from 1985 when the first case of AIDS was reported (2). With the advent of antiretroviral (ARVs) medication, anything less than near perfect adherence to treatment schedules can result in diminishing efficacy of the drugs with subsequent development of viral strains that are drug resistan (3,4). Even when the consequences of poor adherence to medications are appreciated, adherence rates remain sub-optimal (5,6). However getting patients to take drugs everyday without failure for the rest of their lives is one of the biggest challenges. Barriers to adherence differ among patients and can vary over time. This study was therefore aimed at determining factors affecting ARV drug adherence among HIV/AIDS adult patients by using timing of ARV doses and keeping of clinic appointments for prescription refill as key indicators. This study offers important information on factors associated with antiretroviral drug adherence among adult HIV/AIDS patients.

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METHODS

Study site and population

A cross-sectional study design was used in this research. The key variables examined were; demographic, other characteristics of the patients and adherence factors using timing taking of ARV doses and keeping of clinic appointments as key indicators. The study was conducted at Moi Teaching and Referral Hospital (MTRH) in Eldoret, Kenya between May and July 2005. The hospital is strategically located on the great North Road serving not only the residents of Uasin Gishu District but also North Rift valley, Nyanza, Western province, parts of Eastern Uganda and Southern Sudan. It is the second largest National Referral Hospital in Kenya after Kenyatta National Hospital with an established HIV/AIDS medical electronic system. Through AMPATH (Academic Model for Prevention and Treatment of HIV/AIDS), MTRH provides free ARV drugs to HIV/AIDS patients. AMPATH was initiated in 2001 with private philanthropic support and has developed into one of the leading HIV/AIDS control systems in Sub-Sahara Africa.

By the end of July 2005, MTRH was caring for 12,876 HIV/AIDS patients (11,004 adults and 1,872 children) of which 5,860 patients were on ARVs and 463 on PMTCT (Prevention of Mother to Child Transmission).

The study population comprised of all adult patients (18 years and above) who attended HIV/AIDS clinic in MTRH for antiretroviral treatment and consented to participate in the study. Expectant mothers were excluded in this study. Three hundred and eighty four adult patients on ARVs were recruited into the study after informed consent was sought from them. They were interviewed as they came for treatment at the HIV/AIDS clinic. The

researchers worked in collaboration with the clinicians in the identification of patients who had been on ARV treatment for at least three months. Purposive sampling was used to select ten key informants (nurses and doctors in charge of HIV/AIDS clinic). Interviewer-administered questionnaire was administered to patients to determine their demographic information, other characteristics of the patients and adherence factors which were based on the two key indicators while a self-administered questionnaire was administered to the key informants to determine adherence factors based on clinic appointments. The patients who did not meet 100% adherence of taking drugs on time and keeping clinic appointments were further interviewed to determine reasons for not adhering to the prescribed schedules.

Ethical clearance:

The study was reviewed and cleared by Institutional Research and Ethics Committee (IREC) from Moi University/Moi Teaching and Referral Hospital. Thereafter permission was sought in writing from the Director in charge of AMPATH to use their clients. The researchers worked in collaboration with the clinicians in the identification of HIV/AIDS patients who were on ARVS. A written statement was also included on the introductory part of the questionnaires that further explained the study purpose and confidentiality of the research information

Data analysis:

Data generated from the questionnaire were keyed into Statistical Package for Social Sciences (SSPS) version 10.0 and analysed for frequencies, cross-tabulations and Chi-squared test. Statistical significance was set at $p< 0.05$.

Results

A total of 384 patients were interviewed. Comparing males and females, there was significant differences between them on the following factors: Age distribution, marital status, employment status, time of working and hours of working (p=0.000) (Table 1). Among the respondents, 261 (68%) were females and 123 (32%) were males. Half of the participants 198(51.6%) were between the age group of 26-35 years while 27 (70%) were between 18 and 25 years. The mean age of the patients was 36.1±8.5 years (range 18-63 years). About 52.1% of the participants had attained secondary or post secondary education and both males and females had comparable education. 272 (70.8%) of the respondents were married. There were more males 104 (84.6%) married than there were females 168(64.4%). About half of the patients 182(49.4%) were unemployed and this affected females more 140(53.6%) than males 42(34.1%). Majority of the working patients 296 (77.1%) worked during the day. Results established that 211(54.9%) of the respondents worked for eight hours or more per day. A higher proportion of males 87 (70.7%) worked for eight hours or more per day as compared to females 124 (47.5%).

Effects of different factors on levels of adherence

(i) Keeping to prescribed treatment regimens

(ii)

Based on timing of taking ARVs, adherence factors were cross-tabulated with sex of the respondents. The adherence factors were ranked based on their contribution to poor adherence to ARVs and the first top five contributing factors among other factors were as shown in Table 2. Being away from home 264(68.8%) was the most important factor that affected adherence to timing of ARV doses. Males 90 (73.2%) were more affected by this factor than females 74(66.7%). Being too busy affected 226 (58.9%) of the participants. This affected males 77(62.6%) more than females 149(57.1%). Patients also failed to take drugs on time because of forgetting 188(49.0%), having too many medicines to take 125(32.6%) and stigma 111(28.9%) attached to ARVs and the effects of these factors were comparable in both males and females. As regards the significance of various factors in affecting adherence between males and females, only marginal difference was detected in respect to ARV formulation (χ^2 =2.9412, p=0.0861). Hence, the effects of various factors affecting adherence between males and females were basically similar.

Among all respondents in general, 218 (56.8%) failed to take drugs on time. Most of the patients who failed were in the age bracket of 36-45 years and were either divorced, widowed or separated. The respondents who had secondary or post secondary education 123 (61.5%) did not take drugs on time. Those who lived outside Eldoret Municipality 138 (59.8%) or unemployed 107 (58.8%) did not adhere. It was established that the patients who either worked at night shift or did not work failed to take drugs on time. Results indicated that 105(60.7%) of those who worked for less than eight hours or did not work did not adhere as compared to those who worked for eight hours or more per day 113(53.6%). However, there was no significant association between hours of working and adhering to timing of medication (χ^2= 3.463, p= 0.485).

Respondents also failed to adhere to timing of drugs because of being away from home 155(58.7%), forgetting 111(59.0%), change in routine 31(59.6%), running out of medicines 14(60.9%) and due unpleasant to taste 15 (65.2%) of ARVs. ARV formulation (χ^2=3.707, p= 0.055) was marginally significant in predicting poor adherence to ARVs. However other factors considered did not significantly affect adherence to ARVs among the respondents.

Table 1: Demographic and other characteristics of the respondents.

Demographic and other Characteristics	N= 384 Total (%)	Sex N=123 Male (%)	N=261 Female (%)	P value
Age groups (Yrs)				
18-25	27 (7.0)	6 (4.9)	21 (8.0)	
26-35	198 (51.6)	47 (38.2)	151 (57.9)	0.000
36-45	98 (26.5)	36 (29.3)	62 (23.8)	
Over 45	61 (14.5)	34 (27.6)	27 (10.3)	
Marital Status				
Married	272 (70.8)	104 (84.6)	168 (64.4)	0.000
Single	66 (17.1)	12 (9.8)	54 (20.7)	
Divorced/Widowed/Separated	46 (11.9)	7 (5.7)	39 (14.9)	
Education level				
None/Primary/	184 (47.9)	64 (52.0)	120 (46.0)	
Secondary/Post secondary	200 (52.1)	59 (48.0)	141 (54.0)	0.569
Place of residence				
Within municipality	170 (44.3)	54 (43.9)	116 (44.4)	
Outside municipality	214 (55.7)	69 (56.1)	145 (55.6)	0.921
Employment Status				
Salaried	93 (24.2)	46 (37.4)	47 (18.0)	
Self Employed	109 (28.4)	35 (28.5)	74 (28.6)	0.000
Unemployed	182 (49.4)	42 (34.1)	140 (53.6)	
Time of working				
Day	296 (77.1)	109 (88.6)	187 (71.7)	0.000
Night/do not work	88 (30.0)	14 (11.4)	74 (28.4)	
Hours of working				
8 hours/>8 hours	211 (54.9)	87 (70.7)	124 (47.5)	0.000
<8hours/ do not work	173 (45.1)	36 (29.2)	137 (52.5)	

Table 2: Adherence factors by sex of the respondent based on keeping to prescribed treatment regimens.

Adherence factors	Failed to take drugs as scheduled	Total N=384(%)	Males N= 123(%)	Females N=261(%)	χ^2	P value
Away from home	Yes	264(68.8)	90 (73.2)	174 (66.7)	1.6461	0.199
	No	120(31.2)	33 (26.8)	87 (33.3)		
Too busy	Yes	226 (58.9)	77 (62.6)	149 (57.1)	1.0495	0.306
	No	158 (41.2)	46 (37.4)	112 (43.0)		
Simply forget	Yes	188 (49.0)	56 (45.5)	132 (50.6)	0.852	0.386
	No	196 (51.0)	67 (54.5)	129 (49.4)		
Many medicines	Yes	125 (32.6)	40 (32.5)	85 (32.6)	0.0001	0.993
	No	259 (67.5)	83 (67.5)	176 (67.4)		
Avoid stigma	Yes	111 (28.9)	35 (28.5)	76 (29.1)	0.0179	0.894
	No	273 (71.1)	88 (71.5)	185 (70.9)		

It was established that 151(57.9%) of the females did not adhere to correct timing of ARVs due to being away from home 104(54.8%), forgetting 79(59.8%) and side effects of the drug 40(72.7%). Change in routine 22(61.1%), taste 11(64.7%), colour 8(72.7%) and shape 5(71.4%) of ARVs contributed to poor adherence. Males did not adhere to correct timing of taking drugs when they were away from home 51(56.7%), when they were busy 44(57.1%) or simply forgot 32(57.1%). Other factors were change in routine 9(56.3%) and taste of ARVs 4(66.7%).

On the basis of timing of taking drugs, the main factors that significantly affected adherence among males were, time of working (χ^2= 6.2180, p= 0.013) and ARV formulation (χ^2= 4.8332, p= 0.028). Among females, there were no outstanding factors that significantly affected adherence.

(iii) Keeping clinic appointments

Self-report from patients on adherence indicated an adherence level of 100% to clinic schedules for prescription refills. However, from hospital health records, the level of adherence was 359 (93.5%). The overall information from key informants as reported to them by patients on adherence factors to clinic schedules indicated that being away from home (50%), forgetting

(50%), being too busy (50%), stigma attached to ARVs (70%), feeling sick (80%) and change in routine (60%) were the key factors that affected adherence.

Discussion

It is difficult to measure adherence in the outpatient setting with absolute precision and accuracy (7). While there may be no gold standard with which to measure adherence, adherence may be measured in the clinical setting by a variety of strategies such as self reports (including surveys, interviews and diaries), clinical assessments, pill counts, directly observed therapy (DOT), prescription refills, biological assays and medication event monitoring system (MEMS) (8-11). Most studies of adherence use one or more of these tools. In the present study, self-reports of patients were used where timing of taking drugs and keeping of clinic appointments for drug refills were used as key indicators.

Factors that impact on adherence to treatment regimens may simultaneously influence the adherence to other health behaviours. Adherence to medication regimens is a continuum and may adversely be related to abilities and skills needed to adhere to complex regimens (12). The findings that the overall adherence levels based on timing of taking ARVs was low for all respondents 43.2%, (45.5% for males and 42.1% females) clearly indicated that there were serious barriers to adherence. Though adherence to clinic visits was substantially high (93.5%), it was evident that patients took home total number of prescribed doses, but did not take them at the scheduled times. It was not possible to establish whether the patients took the drugs at a later time.

The finding that age, sex, marital status, education level and employment status did not significantly affect adherence was similar to other studies elsewhere (8). The results established that being away from home contributed to poor timing of taking drugs among the patients. Several studies have shown that being away from home, being too busy and forgetting are closely interrelated (13-14). This study established that patients also failed to take drugs as scheduled due to stigma associated with ARVs. Studies elsewhere have shown that HIV/AIDS patients have difficulties in taking drugs in public and carrying drugs around thereby adversely affecting adherence (15). Having too many medicines to take contributed to poor timing of ARVs among the respondents and this reinforced results from other studies that have asserted HIV medication as an extremely complicated process that may require numerous doses of medications and this complicates adherence (16).

Factors that were found to be significantly associated with poor adherence among males were, time of working (χ^2= 6.2180, p= 0.013) and ARV formulation (χ^2= 4.8332, p= 0.028), which was not the case with females. This implied that busy working schedules among the males contributed to poor adherence to medications. It was found that 87 (57.4%) of females and 36(61.0%) of males who had secondary or post secondary education failed to take drugs on time scheduled. This implied that patients with higher education were most likely busy with their professional activities. Due to their professional status in the society it could have been difficult for them to go for drug refills and to take medication in public.

On the basis of keeping to clinic appointments, information from key informants on adherence factors as reported to them by patients indicated that, being away from home, forgetting, being too busy, stigma attached to ARVs, side effects, too many medicines to take, feeling sick and change in routine contributed to poor adherence. Studies have shown that side effects have consistently been associated with decreased adherence and patients who experience more than two aversive reactions are less likely to continue with the treatment (17). Patients may self-adjust their regimens because of side effects, toxicity or personal beliefs (18). Forgetfulness and being too busy have been cited as the most common reasons for poor adherence to medications (19). A change in daily routine activities of the patients contributed to poor adherence to clinic schedules. If routine activities and lifestyles of patients are associated with medication schedules, adherence to medication can easily be accommodated (20).

In conclusion, in order to maximize the benefit of ARV therapy, patients should be educated on the need of adhering to taking the right dose at the right time as an intervention against barriers to adherence. This is because the overall adherence as evidenced in this study based on timing of ARVs was very poor as compared to keeping clinic appointments among all the respondents. Future research should investigate the cause of disparity in adherence between refills and time of taking ARV drugs, utilization of multiple measures of adherence to be incorporated in the care plans and multiple-target interventions focused to resolve the barriers to adherence should be implemented based on barriers defined to be potentially or actually present.

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