

Adherence to Anti-retroviral Therapy among HIV Positive Pregnant Women in Ayder Referral Hospital, Northern Ethiopia

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Abstract

Background: Human Immunodeficiency Virus (HIV) is one of the major global public health problems. Anti-retroviral therapy (ART) helps to prevent transmission of HIV from infected pregnant women to the un-born babies. ART adherence rate, as high as 95% is crucial to effectively decrease maternal viral load and risk of vertical transmission of HIV. The aim of this study was to evaluate ART adherence level among HIV positive pregnant women in Ayder referral hospital.

Methods: A cross-sectional study was conducted from March to May 2016 at Ayder referral hospital. All HIV positive pregnant women who were on ART follow up during the study period were included. Data were collected through direct interview of participants and review of their medical records. Data were entered and analyzed using SPSS version 20 software.

Results: A total of 41 HIV-positive pregnant women were interviewed. The mean age was 30.1 ± 2.3 years. Thirty eight (92.7%) participants were within the age group of 20-34 years. Forty participants (97.6%) were disclosed their HIV status to their husband and/or families. Nineteen (46.3%) participants were taking ART medication for less than 2 years. Thirty nine participants had good adherence rate ($\geq 95\%$). Illiterate participants had lower adherence rate (71.4%) as compared to literates. The common reasons for missing a dose in the last one month were forgetfulness and side effect of the drug.

Conclusions: This study showed a good ART adherence among HIV positive pregnant women. The main reasons for missing a dose in the last one month were forgetfulness and side effect of the drug.

Keywords: Adherence; ART; Pregnant women; HIV; Reason for missing dose

Introduction

HIV/AIDS is one of the major public health problems specifically in Sub-Saharan Africa [1]. Highly active antiretroviral therapy (HAART) is a breakthrough and celebrated in the reduction of mortality and improves the quality of life of people living with HIV/AIDS [2].

According to the United Nations program on HIV and AIDS (UNAIDS) report, 57% of pregnant women living with HIV in low and middle income countries received effective antiretroviral drugs for the prevention of mother to child transmission (MTCT) in 2011, substantial increase from 48% in 2010 [3]. In Ethiopia, close to 20,000 (65%) of HIV positive pregnant women have received ART to prevent vertical transmission of HIV from mother to child in 2014 [4].

The risk of HIV transmission from mother to child, without preventive interventions, ranges from 15% to 45%. The rate can be reduced to below 5% with effective interventions during the periods of pregnancy, labour, delivery and breastfeeding [5].

HAART adherence is a complex behavior, requiring patients to remember multiple medications and dosing schedules. Patient failure to follow ART regimen can lead to the development of treatment resistant strains and poorer health outcomes [6,7].

A three month study in Nigeria among pregnant women revealed that adherence rate was 80.6% up on using 3 day recall method, with a non-adherent rate of 19.4% [8]. A retrospective cohort study in Malawi showed that the retention rate was 72.5% [9].

In 2013, the Ethiopian government adopted Option B+ as a national policy to prevent HIV MTCT which stated that every pregnant woman diagnosed HIV positive should starts life-long ART [10]. One study in Tigray showed that 87.1% HIV positive pregnant women were adherent to Option B+ PMTCT drugs. The main reason for non-adherence was forgetfulness [11].

Several methods have been used to measure adherence, but no gold standard has been established. Available methods include pill counts, self-report, prescription refills, medication event monitoring system, biological markers and assays [8]. ART Adherence is crucial to effectively decrease maternal viral load and reduce the risk of MTCT of HIV [12].

Positive predictors of adherence in Ethiopia include social support, adherence counseling and use of memory aids while negative predictors include: depression, substance use, alcohol drinking, stigma and discrimination, dosing three times daily regimens, heavy pill burden, cost and access to transportation (economic problems), lack of nutritional support and drug adverse effects [13].

The study documented in Ethiopia revealed that 26 (9.9%) non-adherent participants had missed their ARV medication within the 3 days prior to the study and forgetting to take the medications (92.3%) was the dominant obstacle and fear of drug side effects (38.5%) [14]. Different studies in Ethiopia evaluated the adherence rate among adult ART patients in different areas of the country. Two studies in Ethiopia reported 81.2% and 82.8% adherence rate in Addis Ababa [14,15].

To date, with the exception of one adherence study [11], there are no published studies on ART adherence on pregnant women in Ethiopia. Hence, the aim of this study was to evaluate the level of adherence among HIV positive pregnant women attending ANC clinic in ARH.

Methods

Study design and setting

A cross section study was conducted from March to May 2016 in Ayder referral hospital (ARH) in Northern Ethiopia. ARH provides several health services including volunteer counseling and testing, ART center, adherence counseling, family planning and sexually transmitted infections (STIs). A total of 1210 patients were attending ART clinic at Ayder referral hospital for health care services. Of this, 1114 were on ART, and 41 patients were pregnant who were on ART follow up during the study period. All HIV positive pregnant women who were taking ART and attending ANC in Ayder Referral Hospital were included.

Outcome definitions

Treatment adherence: Defined as the ability of taking medications correctly as prescribed within the last one month [16].

Good adherence: If the optimal levels/rates of adherence is as high as 95%.

Fair adherence: If the optimal levels/rates of adherence is between 85 up to 94%. **Poor adherence:** If the optimal levels/rates of adherence is less than 85%.

Data collection and analysis

Data were collected using patient medical records/card and checklist interview that includes patients socio-demographic information's, regimen and patient related factors, provider-related factors and also patients time to reach health facility. The adherence (missing medications) to antiretroviral therapy was assessed using the self-report method in the preceding one month. All data were coded and entered to SPSS version 20.0 software for analyses. Descriptive statistics were employed.

Ethical approval

Ethical clearance was obtained from Mekelle University Research ethical review committee. All study participants were informed about the objectives of the study and signed the informed consent. Data

confidentiality was maintained using codes by omitting the name and address of the patient and prescriber.

Results

Socio-demographic characteristics

A total of 41 HIV-positive pregnant were interviewed. The mean age of the study participants was 30.1 (SD: +2.3). Majority, 38 (92.7%), of the pregnant women were within the age group of 20-34 years and Urban residents. Thirty four (82.9%) participants were Orthodox Christian. Most of the participants (95.1%) had Body Mass Index (BMI) \geq 18. Almost all, 40 (97.6%), of the participants were married at the time of the survey (Table 1).

Characteristics		No (%)
Age	20-34	38 (92.7)
	35 and above	3 (7.3)
BMI	<18	2 (4.9)
	\geq 18	39 (95.1)
Residence	Urban	38 (92.7)
	Rural	3 (7.3)
Religion	Christian	34 (82.9)
	Muslim	7 (17.1)
Educational level	Illiterate	7 (17.1)
	Elementary complete	7 (17.1)
	High school complete	16 (39)
	College/university complete	11 (26.8)
Occupation	Housewife	3 (7.3)
	Governmental employed	23 (56.1)
	Self-employed	15 (36.6)
Marital Status	Single	1 (2.4)
	Married	40 (97.6)
Monthly income (ETB)*	700-2600	15 (36.6)
	700-2600	15 (36.6)
	3501-5500	11 (26.8)

BMI: Body Mass Index; No: Number; ETB: Ethiopian Birr; * 1 USD: 21.9 ETB

Table 1: Socio-demographic characteristics of HIV positive pregnant women at ARH, 2016.

Clinical markers and HIV related characteristics

The baseline CD4 count of participants who were less than 350 cells/ μ l of blood accounted 34.1%. After initiation of HAART, only 9.7% of participants had CD4 count of less than 350 cells/ μ l. This indicates greater improvement in CD4 count among pregnant women who were taking HAART. Forty (97.6%) of the participants disclosed their HIV

status to their husband and/or families. Of those who disclosed their HIV status, 47.5% were only for husbands and 52.5% for both husbands and families. Thirty four (82.9%) participants took 15-90 minutes from their home to reach ARH for medication and all of them had monthly regular follow ups. Thirty six (87.8%) participants were on TDF-3TC-EFV regimen. Nineteen (46.3%) of the participants were enrolled on HAART for less than 2 years and 43.9% for 2-4 years (Table 2).

Characteristics	No (%)	
Baseline CD4 count (cells/μl)	<350	14 (34.1)
	350-450	21 (51.2)
	>450	6 (14.6)
Current CD4 count (cells/μl)	<350	4 (9.7)
	350-450	23 (56.1)
	>450	14 (34.1)
Discloser of HIV status	Yes (Husband and family)	40 (97.6)
	No	1 (2.4)
Time taken from their home to ARH for Medication (Minute)	15-90	34 (82.9)
	91-166	2 (4.9)
	167-243	4 (9.8)
	>243	1 (2.4)
ART regimen	TDF/3TC/EFV	36 (87.8)
	AZT/3TC/EFV	1 (2.4)
	TDF/3TC/NVP	3 (7.3)
	AZT/3TC/NVP	1 (2.4)
Duration on ART	<2 years	19 (46.3)
	2-4 years	18 (43.9)
	4 years	4 (9.8)
Reminder for regular Medication	Clock alarm	34 (82.9)
	TV/Radio	4 (9.8)
	Family member	2 (4.9)
	AZEN (alahu akiber)	1 (2.4)

HIV: Human Immunodeficiency Virus; ARH: Ayder Referral Hospital; TDF: Tenofovir Disoproxil Fumarate; TC: Lamivudine; EFV: Efavirenz; AZT: Azidothymidine/Zidovudine; NVP: Nevirapine; ART: Anti-Retroviral Therapy; TV: Television; No: Number

Table 2: Clinical markers and HIV related characteristics of HIV positive pregnant women on HAART at ARH ANC clinic, 2016.

Only 12.2% were took medications other than ART in the last one month and the medications were Iron & Folate Supplement (Fefol) and Metronidazole. None of the participants used social drugs like alcohol, chat, and cigarette. Majority of the study participants (82.9%) used clock alarm as adherence aid and the rest used also TV/Radio (9.8%) and family member (4.9%).

In the last one month, 97.6% of participants were never had co-morbidity. Only 2.4% study participant was currently on treatment for opportunistic infection (OI) and treated with metrinidazole in the past one month.

ART Adherence level

Overall, 95.1% of participants were adherent and 4.9% were non-adherent to HAART (Figure 1). For those who missed a dose in the last one month, the common reasons were forgetfulness when to take a drug and side effect of the drug like vomiting and nausea.

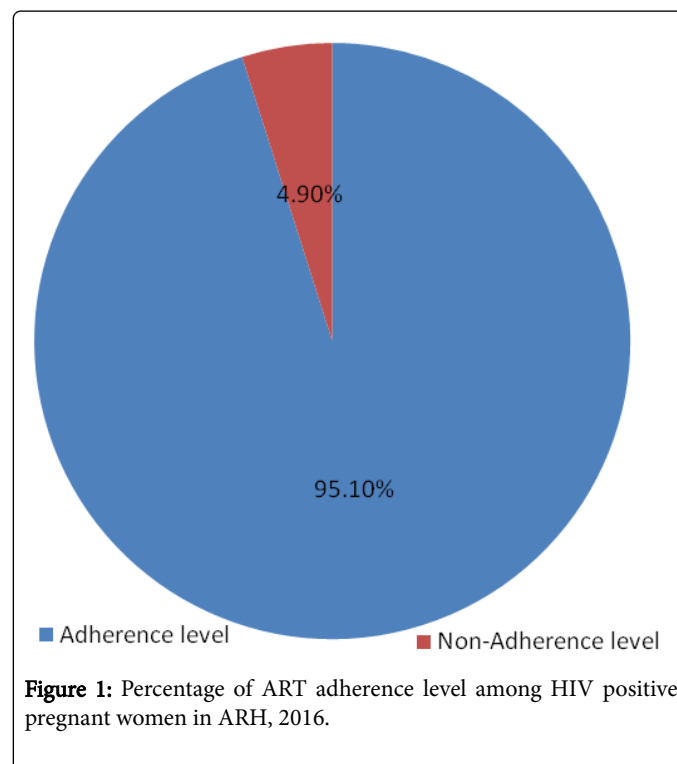


Figure 1: Percentage of ART adherence level among HIV positive pregnant women in ARH, 2016.

Discussions

ART adherence rate among HIV positive pregnant women was 95.1% in this study. This is higher than study reported in Nigeria (80.6%), Zambia (82.5%) and Malawi (72.5%) [8,9,17]. This might be due to good practice of PMTCT and awareness of the participants in the study area and having good regular follow up that increase the adherence rate in the study area.

Our study showed higher adherence rate as compared to study in Tigray accounted 87.1% among pregnant women [11] and other studies in Ethiopia also documented among adult ART patients such as 81.2% and 82.8% in Addis Ababa [14,15] and 81.1% in Afar [18]. This might be due to difference in study participants, adequate adherence counseling and good educational status in the study area.

Moreover, 4.9% of participants were non-adherent which is lower than studies in Zambia (16.3%) and Nigeria cities (21.7%, 37.1% and 37.4%) [12,19-21]. This might be due to difference in geographical location, sample size and study design, knowledge of adherence, awareness of PMTCT and variable programme implementation.

In our study, the main reasons for missing doses were forgetfulness and side effect of the drug which is similar with other studies

conducted in Ethiopia [13,22-24]. The present study showed that illiterate participants had lower adherence level (71.4%) as compared to literate. This could be due to educated people might be easily understood the education provided about adherence counselling during medication. Level of adherence was affected by the average monthly income of the study participants. Participants who had less monthly income (700-2600 ETB) were less adhered (86.7%) as compared to high monthly income. This might be due to shortage of transport cost and food that makes them less adherence.

The majority (82.9%) of participants were used clock alarm that allow for multiple daily reminders for regular medications. This finding is supported by other studies in Ethiopia [22-24].

The number of pregnant women, who had baseline CD4 count less than 350 cells/ μ l of blood, was 34.1% but only 9.7% had CD4 count of less than 350 cells/ μ l after initiation of HAART. This revealed greater improvement in CD4 count among women taking HAART and showed a good adherence to antiretroviral treatment which indicates reduced destruction of CD4 cells. A systematic review study documented that cognitive-behavioral interventions, education, treatment supporters, directly observed therapy, and active adherence reminder devices (such as mobile phone text messages) were significantly increase ART adherence [25]. These effective adherence interventions should increasingly be considered for routine implementation in ART programmes and health care systems.

In summary, the present study showed a good adherence to antiretroviral treatment among HIV positive pregnant women in ARH. The common reasons for missing a dose were forgetfulness and side effect of the drug. The limitation of this study was small sample size and unable to associate the risk factors with the adherence level. Longitudinal study with large sample size will be required in the future that can examine the relationship between ART adherence and risk factors.

Competing Interests

The authors declare that no any competing interest exists.

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Nil

Authors' Contribution

WS: Conceived and designed the study, carried out the study, analyzed and interpreted the data, wrote the first draft and final write up of the manuscript; WM: Designed the study, analyzed and interpret the data and writing the final manuscript, agreed with manuscript results and conclusions; AS: designed the study, analyzed and interpret the data and writing the first and final manuscript, agreed with manuscript results and conclusions.

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