Predictors of Adherence to Highly Active Antiretroviral Therapy among Low Income Adult Patient in Arsi Zone

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Abstract: *Background: Good adherence to antiretroviral therapy reduces the risk of drug resistance. Little is known about the predictors of adherence to highly active antiretroviral therapy among low income patients in Ethiopia. Therefore this study determines the magnitude and predictors of adherence to antiretroviral therapy among these patients in Arsi zone.*

Methods: A cross sectional study was carried out from January 1, 2014 to September 20, 2016 among 280 adult PLWHA (≥ 18 years) attending ART clinics in Arsi zone health centers and hospitals. Multiple Logistic regression models were constructed with adherence and independent variables to identify the predictors.

Results: Patients who got family support were 2 times [2.11(1.25-3.58)] more likely to adhere than those who didn't get family support as an independent predictor of overall adherence (dose and food). The reasons given for missing drugs were 59(21.1%) being away from home and 59(21.1%) being busy with other things.

Conclusion: The adherence rate low income patients were associated with social support. This study highlights emphasis should be given to social supports that help patients to follow their medication.

1. INTRODUCTION

Antiretroviral treatment success depends on sustainable high rates of adherence to medication regimen of HAART. However, significant proportions of HIV-infected patients do not reach high levels of adherence and this can lead to drug resistance and public health problems. A meta-analysis study found adherence to ART 60%(1). Twenty four percent non-adherences has been reported in Southwest Ethiopia(2).

World Health Organization (WHO) recommendations on the use of antiretroviral therapy in resource-limited settings recognize the critical role of adherence in order to achieve clinical and programmatic success(3). Good adherence to anti- retroviral therapy is necessary to lower the risk of drug resistance(4). Very high levels of adherence (> 95%) are required for ART to be effective for long term and to prevent the emergence of resistant viral strains(5). There has been a concern about the capability of patients in resource-limited settings to adhere to ART, especially in the African context (6).

Both clinical experience and emerging data suggest that many patients with chronic HIV disease do no fully adhere to their Highly Active Antiretroviral Therapy (HAART) regimens (7).

2. MATERIALS AND METHODS

Community based cross-sectional study was conducted in Arsi zone between January 1, 2014 and September 20, 2016 among low income patients on HAART at least for six months. Data were collected using structured questionnaire. The collected data were analyzed using SPSS. Multiple Logistic regressions were done with adherence and the independent variables to identify the predictors. Odds Ratios (OR) and their 95% CI were used to look into the strength of association between the dependent and independent variables. A person was said to be food adherent if he/she always followed dietary instructions agreed upon with the providers, otherwise he/she was labeled as non-adherent. A patient is said to be dose adherent when he/she took ≥ 95% of the prescribed doses correctly otherwise non-adherent. So in this study Adherent is defined as when a PLWHA takes more than 95% of prescribed drug , follows dose restriction and dietary instruction from health care provider for one week prior to the study otherwise Non-Adherent. This type of measurement of adherence has been used in similar setting and adherence in the previous seven days was used for comparison (2).

3. RESULTS AND DISCUSSION

In our study patient self-report showed that, 95% of the patients were adherent with $\geq$ 95% of prescribed doses in the last seven days (Table). Study done in north-west Ethiopia shows that the adherence level of hospitalized patients were 80.9%(8). Meta-analysis done in Spain indicated that the overall percentage of adherence was 55%, although this value may be an overestimate(9). Other studies conducted in developed countries demonstrated that the rates of adherence by self-report ranged from 40% to 70% (10). The differences could be due to differences in income.

There is good reason to expect that socio-demographic, psychosocial, and clinical variables should be associated with antiretroviral adherence and thus HIV disease activity(11). In this study patients with family income of 501-1000 were more likely to have an overall adherence than patients less than 500 family income in bivariate analysis (Table). Similarly, a recently published meta-analysis (12) examined the association between socio-economic status and adherence to antiretroviral therapy. A study suggested that Special attention need to be given to patients who have lower educational status and are members of households with low income(13). This indicates that low income is one of the predictors of adherence.

In our study patients who got family support were 2 times more likely to adhere than those who didn't get the family support (Table). Another factor facilitated adherence was support from the family encouraging and helping to remind them to take the treatment. Social support encouraged adherence [41]. Similarly, it has been reported in other studies (2) as social support was a constant predictor of adherence. Lacks of social support have been found to be associated with lower adherence(15). Social support [36] was associated with greater adherence. A study suggested provision of social support for adherence(16).

Table 1. *Socio-demographic and economic characteristics of the study participants among low income adult patient in Arsi zone, 2016.*

Characteristics		Frequency	Percentage
sex	male	126	45
	female	153	54.8
age	18-24	13	4.6
	25-34	130	46.5
	35-44	100	36.1
	>45	36	12.7
Marital status	married	135	48.5
	single	58	21
	widowed	37	13.5
	divorced	47	16.8
Educational status	illiterate	28	10
	elementary	141	50.5
	secondary	78	28
	12+	31	11.2
Occupation	employed	112	40.4
	House wife	28	10
	merchant	36	13
	Daily labor	74	26.5
	Have no job	17	6.4
	others	11	4
Living with	Alone	67	24
	family	47	17
	parent	152	54.3
	other	11	4.1
Monthly income	<500 Ethiopian birr	210	75
	501-1001 Ethiopian birr	27	9.6

religion	orthodox	142	51
	Muslim	68	24.4
	protestant	58	21
	others	9	3.5

Table 2. *Self-reported dose and food Adherence of the respondents among low income adult patient in Arsi zone, 2016.*

characteristics	adherence	frequency	percentage
Self Reported Dose Adherence (Last 7 Days) (N = 280)	Adhered	266	95
	Not Adhered	14	5
Self Reported Food Adherence (Last 7 Days) (N =)280	Adhered	251	89.8
	Not Adhered	28	10.1

Table 3. *Final logistic regression model that predict adherence to dose and food among low income adult patient in Arsi zone, 2016.*

variable		adherence		Crude OR(95%CI)	p-value	Adjusted OR(95%CI)	p-value
		Adhered N (%)	not adhered N (%)				
WHO stage	I	4(33.3)	8(66.7)	0.26(0.07-0.96)	0.01	0.16(0.041-1.18)	0.12
	II	200(71.7)	79(28.3)	1.31(0.52-2.73)		1.18(0.54- 2.55)	
	III	217(77.8)	(62)22.2	1.75(0.91-3.42)		1.34(0.57- 2.71)	
	IV	(185)66	(95)34	1.00		1.00	
Family income	Less than 500EHB	194(69.5)	84(30.1)	1.00		1.00	
	501-1001EHB	198(71.0)	81(29.0)	1.03(0.20-0.92)		1.06(0.58-1.97)	
Getting family support	no	219 (78.5)	60(21.5)	1.00	0.01	1.00 2	0.01
	yes	177(63.3)	102(36.7)	0.47(0.28-0.77)		2.12(1.24-3.58)	

4. CONCLUSION

The adherence rate most patients who have low income were associated with social support and family income. This study highlights emphasis should be given to social supports that help patients to improve adherence to their medication.

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