

# Study the drug adherence and possible factor influencing drug adherence in HIV/AIDS patients in north eastern part of India

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## ABSTRACT

**Background:** Majority of HIV/AIDS patients who are on Highly Active Anti Retroviral Therapy (HAART), are not aware about drug adherence and its importance which is the most important factor for drug adherence. **Objectives:** To study the level of drug adherence in patients accessing antiretroviral therapy (ART) through the National program and factor influencing drug adherence. **Materials and Methods:** In present study, we enrolled 102 newly diagnosed patients, among them in 79 patients, ART was started. To study the drug adherence a pretested, semistructured questionnaire was formed and patients were followed up for 6 months of the study. Pretest and posttest counseling was done to all such patients. **Results:** A total of 28 patients missed the dose in 1<sup>st</sup> follow-up, nine patients missed in 2<sup>nd</sup> follow-up, eight patients missed in 3<sup>rd</sup> follow-up. Three patients lost follow-up in 2<sup>nd</sup> follow-up, three patients further lost follow-up in 3<sup>rd</sup> follow-up. Running out of pills (40.0%), side effect (15.5%), and family problem (13.3%), poor transport facility for taking drug (8.9%) and forgetfulness (11.1%) are five major causes related to miss dose. In females patients, drug adherence (69%) was initially less than male patients (76%) but latter on female patients (96.3%) had better adherence than males (95.2%). **Conclusion:** This study suggest that drug adherence can be increased by proper counseling and close monitoring of the patients which may have a great role in preventing the drug resistance and ART response.

**Key words:** Adherence, HIV/AIDS, antiretroviral therapy adherence, counseling

## INTRODUCTION

HIV/AIDS is a chronic infectious disease causing profound immunosuppression in form of decrease in CD4 cell count.<sup>[1]</sup>

Introduction of antiretroviral therapy (ART) has improved the CD4 count and transformed the disease from a fatal to manageable disease.<sup>[2]</sup> Major problem with ART in resource-limited settings is the emergence of drug-resistant viral strains due to poor drug adherence and the spread of these resistant viral strains in the population.<sup>[2-4]</sup> A very high levels of drug adherence (>95%) are required for increasing the long-term effectiveness of ART and to prevent the emergence of resistant viral strains.<sup>[5]</sup> The goal of national ART program in India is also to attain >95% individual drug adherence rate.<sup>[6]</sup> But adherence to ART is difficult, and suboptimal ART regimens may result in rapid development of drug resistance.<sup>[7,8]</sup> The definition of adherence has been also expanded that include retention in care, which includes attending regular follow-up visits.<sup>[9]</sup> Since the inception of national ART program in 2004, NACO has reported 7% loss to follow-up cases and 3% patients who had missed treatment at some point of

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time.<sup>[10]</sup> Optimizing adherence and minimizing loss to follow-up are two major challenges for the ART roll-out program in India.<sup>[11]</sup> It is evident that adherence to treatment and follow-up are dependent on patients' own will and health-seeking behavior which needs to be studied within their own sociocultural context.<sup>[12]</sup> Since a large number of patients are on ART in India, whose disease will progress if adherence is suboptimal,<sup>[13]</sup> research is urgently needed to determine patient-level barriers to these issues. To study the level of drug adherence in patients accessing ART through the national program and factor influencing drug adherence.

## MATERIALS AND METHODS

A hospital-based cross-sectional exploratory study was carried out in ART center of Sir Sunder Lal Hospital, Banaras Hindu University, Varanasi, India. The study was approved by the ethics committee of the Institute of Medical Sciences BHU. HIV positive patients enrolled in the ART center and started on ART, were included in the study after informed consent. Subjects were started on ART as per NACO guidelines, that is, CD4 count < 200/ $\mu$ L or stage 4 disease. They were given 1 month therapy and followed-up every month for 6 months. Patients were asked to bring back the remaining pills in the pill box at every visit which was counted by the counselor. At every visit, patient was evaluated clinically and adherence was monitored. Drug adherence was estimated by patients self-reporting, pill count, and by using visual analogue scale (VAS). Factors affecting adherence were assessed by a pretested, semistructured questionnaire.

### Statistical analysis

Statistical software SPSS for windows (version 15.0) was used for data management and analysis.

**Table 1: Distribution of cases by age and sex**

Age groups	Sex				Total	
	Male		Female		No.	%
	No.	%	No.	%		
<20	0	0.0	0	0.0	0	0.0
20-29	14	21.5	11	29.7	25	24.5
30-39	29	44.6	20	54.1	49	48.0
40-49	18	27.7	5	13.5	23	22.5
50 and above	4	6.2	1	2.7	5	4.9
Total	65	100.0	37	100.0	102	100.0

**Table 2: Number of missed dose in last 7 days**

Response	1 <sup>st</sup> follow-up				2 <sup>nd</sup> follow-up				3 <sup>rd</sup> follow-up			
	Male		Female		Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
None	32	64.1	19	65.5	41	82.0	26	89.7	39	78.0	26	89.7
1-2	11	22.0	6	20.7	4	8.0	2	6.9	3	6.0	3	10.3
3-4	5	10.0	2	6.9	1	2.0	0	0.0	1	2.0	0	0.0
5 or more	2	4.0	2	6.9	1	2.0	1	3.4	1	2.0	0	0.0
Lost follow-up	0	0.0	0	0.0	3	6.0	0	0.0	6	12.0	0	0.0
Total	50	100.00	29	100	50	100	29	100	50	100	29	100

## RESULTS

During this period, 102 newly diagnosed HIV positive patients enrolled in the ART center, and only 79 patients were started on ART. A total of 95% cases were in the age group of 20-49 years. Females (mean age: 33.75 years) were younger than males (mean age: 34.09) [Table 1]. Female cases (43.2%) were more illiterate than males (18.5%). A total of 49.0% patients know that ART should be continuing life long. Majority of patients (60.8%) did not know any factor which increases the drug compliance. Increase awareness (11.7%), come 2 day before for taking drug (13.7%), taking drug at fixed time (9.8%) are important factor which increases the drug compliance. Twenty-eight patients missed the dose in 1<sup>st</sup> follow-up, nine patients missed in 2<sup>nd</sup> follow-up, eight patients missed in 3<sup>rd</sup> follow-up. Three patients lost follow-up in 2<sup>nd</sup> follow-up, three patients further lost follow-up in 3<sup>rd</sup> follow-up [Table 2]. Running out of pills (40.0%), side effect (15.5%), and family problem (13.3%), poor transport facility for taking drug (8.9%), and forgetfulness (11.1%) are five major causes related to miss dose [Table 3]. A total of 19% patients (15) in first follow-up did not know that missing the dose make treatment ineffective, but this % decreases with follow up (2<sup>nd</sup>: 2.6%, 3<sup>rd</sup>: 1.4%). Patients lost the follow-up were not included in this analysis. In female patients, drug adherence (69%) was initially less than male patients (76%) but latter on female patients (96.3%) had better adherence than males (95.2%). Drug adherence was initially poor in joint family (71% vs. 82%) but after follow — up, it becomes better than nuclear family (96.3% vs. 93.3%).

## DISCUSSION

Nonadherence is associated with increased rate of hospitalization and longer hospital stays. In this study, concerns related to maintenance of optimal adherence to ART among HIV-infected patients receiving free ART.

For HIV-infected patients treated with ART, adherence to ART is a significant determinant of survival. Adherence is second only to the CD4 cell count as a predictor of progression to AIDS and death.<sup>[14]</sup> For most of the HIV patients >95% adherence is necessary to achieve complete and durable viral suppression.<sup>[11]</sup>

Keeping these issues in mind, the present study include the level of drug adherence and the various factors affecting the drug

**Table 3: Causes of those patients who missed the dose (open question)**

No. of missed dose	1 <sup>st</sup> follow-up		2 <sup>nd</sup> follow-up		3 <sup>rd</sup> follow-up		Total	
	No.	%	No.	%	No.	%	No.	%
Family problem	4	14.3	1	11.1	1	12.5	6	13.3
Poor transport facility for taking drug	3	10.7	1	11.1	0	0.0	4	8.9
Running out of pills	11	39.3	3	33.3	4	50.0	18	40.0
Side effect	5	17.9	1	11.1	1	12.5	7	15.5
Economic problem	1	3.6	1	11.1	1	12.5	3	6.7
Ignorance	1	3.6	1	11.1	0	0.0	2	4.4
Forget	3	10.7	1	11.1	1	12.5	5	11.1
Total	28	100.0	9	100.0	8	100.0	45	100.0

adherence to ART among HIV-infected patients receiving free ART. After starting the ART, adherence was poor in first follow-up. A total of 28 patients (35.4%) missed at least one dose of ART in last 7 days during first follow-up. During second follow-up, 11.4% missed the dose and three patients (3.8%) lost the follow-up. In third follow-up, 10.2% patient missed the dose and further three patients lost the follow-up [Table 2]. Thus, we can say drug adherence increases with subsequent follow-up but 3-4 patients (3.8%-5.06%) regularly lost follow-up due to some reason. Opposite to our study, some study showed that rates of adherence are known to decline over time.<sup>[11]</sup> This might be due to proper counseling of the patients. For assessing the cause of missed dose [Table 3], patient missed the dose due to running out of pills (40.0%), side effect (15.5%), family problem (13.3%), and poor transport facility for taking drug (8.9%), forgetfulness (11.1%), economic problem (6.7%), and ignorance (4.4%). Findings are also little bit similar to some other studies.<sup>[15,16]</sup> Drug adherence by VAS was > 95% in first follow-up (73.4%) second follow-up 92.2%, third follow-up 93.2%. Drug adherence <70% was noted in four patients (5.1%) in first follow-up which become two patients (2.6%) in 2<sup>nd</sup> follow-up. In third follow-up no one patient had drug adherence <70%. So, it is clear that drug adherence improved in subsequent follow-up. These findings are also similar to result of some other studies.<sup>[15,16]</sup> Along with that, in our study the adherence rate is better than some older studies.<sup>[17-19]</sup> A total of 81.0% patients know that missing the dose leads to treatment ineffective in first follow-up, but this decreases with subsequent follow-up, (2<sup>nd</sup>: 2.6%, 3<sup>rd</sup>: 1.4%) patients lost follow-up was not in clucked. In present study, female patients drug adherence >95% were initially lower (69.0%) than male patient but in subsequent follow-up female patients show better adherence than males (96.3% vs. 95.2%). Drug adherence (>95%) was initially better in nuclear family (82.6%) than joint family (71.0%) but latter on drug adherence (>95%) become better in joint family (96.3%) than nuclear family (93.3%). This improvement in adherence is most probably due to social support by family members after proper counseling. An another study has also showed that an educational intervention along with proper counseling improves adherence to antiretroviral regimens and health status.<sup>[19]</sup>

## CONCLUSION

This study suggest that in resource-limiting countries, proper counseling and close monitoring of the patients can help in

increasing drug adherence and decreasing loss of follow-up, which may have a great role in preventing the drug resistance and ART response.

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