

Anti-Retro Viral Therapy Drug Adherence: A Descriptive Study



Health Science

KEYWORDS : ART, Drug Adherence, PLHA

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ABSTRACT

Background: Human Immunodeficiency virus (HIV) has an estimated adult prevalence of 0.31 in India. Anti retro viral drugs (ART) are the treatment of choice in HIV and non adherence is an important factor in treatment failure and development of resistance. Several research studies shows that the average ART adherence is 70% whereas the required adherence should be more than 95%.

Objectives: Objectives of the study were to assess the level of knowledge regarding ART, drug adherence, association between knowledge and adherence and the factors affecting drug adherence among PLHA (People living with HIV/AIDS) visiting ART centre of the medical college.

Methods: A cross sectional descriptive study using a structured interview questionnaire was conducted from Oct 2011 to Nov 2011 among 84 PLHA registered to ART centre under NACO attached to a medical college. Structured interview questionnaire included demographic data, knowledge questions on ART, adherence measurement using Morisky adherence scale and pill count method and the factors affecting adherence. Data was analyzed using SPSS 16 statistical analysis software.

Results: The mean knowledge percentage score of the PLHA was 66.6% which falls in to good category. Mean ART adherence was 80.35% with standard deviation of +12.86. Knowledge regarding ART and drug adherence shows a highly significant association ($p < 0.0001$).

Conclusion: The results have shown that the knowledge and the adherence among PLHA were satisfactory but not reached the optimum desirable level. Improving adherence requires collaborating with the patient in an effort to understand and ameliorate individual impediments to adherence, by dedicating valuable time with every patient to educate, plan for adherence and maintain support and collaboration throughout the course of treatment.

Introduction

HIV infection is a major problem faced by the world. In India about 2.5 million people of age group 15 to 49 are estimated to be living with HIV/AIDS. India is the third largest in the world with HIV/AIDS prevalence of 0.36 %¹. HIV infection is not the end of life and people can lead a healthy life for a long time with appropriate medical care. Anti retroviral Therapy (ART) regimens have been designed with the objectives of quick inhibition of viral replication to reduce viral count to non detectable levels that would also reduce transmission.

One of the foremost concerns of ART program is the ability of PLHA to maintain near perfect adherence over long term. Dr Charles Gilks, UNAIDS India Chief says that at the end of National AIDS Control Programme (NACP) phase IV, at least one million people will be on ART in India.² He also cited that good ART adherence can help PLHA to live up to 25 yrs or more if he/she has access to treatment. (TOI Jun 5, 2011, Kounteya Sinha)

Improving patient adherence to ART is essential to effective treatment and represents a major challenge confronting healthcare providers. NACP phase III target is to achieve and maintain a high level of drug adherence and minimise the number of patients lost to follow up, so that drugs are effective for longer period of time. Health care workers play a crucial role in all aspects of ART, including the promotion of successful adherence by close monitoring and frequent evaluation of PLHA on ART.

Essential attributes towards drug compliance include knowledge of disease processes, critical thinking, and the ability to navigate the healthcare system. Interventions at various levels, viz. patient level, medication level, healthcare level and community level, enhance adherence and overall outcome of ART.

Objectives

Objectives of the study were to assess the level of knowledge regarding ART, drug adherence, association between knowledge and adherence and the factors affecting drug adherence among PLHA visiting ART center of the medical college.

Methods

A crosssectional descriptive study using a structured interview questionnaire was conducted from Oct 2011 to Nov 2011 among

84 PLHA attending the ART centre. The setting selected for the study was the ART centre established by NACO which is attached to a medical college where antiretroviral therapy is dispensed to civilian clients. The investigator prepared a list of all registered PLHA on ART aged 18 and above from the ART register of the ART centre. Out of this, 88 were selected by computer originated random numbers. Out of 88, one did not report and three were unwilling to participate.

A thorough review of research and non-research literature was undertaken to decide on the tools to be used for data collection based on the objectives of the study.^{3,4,5,6} WHO recommends multi method approach when measuring patients' adherence. UNAIDS combines self reporting and objective measure like pill count to develop a multi method tool. A structured interview questionnaire was developed by the investigator for assessing the level of knowledge on ART and ART adherence among PLHA. The structured interview questionnaire included demographic data, knowledge questions on ART, adherence measurement using Morisky adherence scale and pill count method and the factors affecting adherence. Knowledge was scored in to four equal quartiles of excellent, good, average and poor. Adherence measured were grouped in to high (>95%) moderate (75%-95%) and low (<75%) adherence.

Sample was selected by simple random technique and face to face interview was conducted for 30 to 40 minutes after taking consent. Each interview lasted for 30 - 40 minutes and each day a maximum of 04 subjects were interviewed and included in the study. Observation technique was used for pill count to assess adherence. All subjects carried their pill containers. After interviewing, investigator counted the number of medications present in the pill containers of respective PLHA in the presence of the counselor and endorsed it in the tool and in the patients' diary. Data was analyzed using SPSS 16 statistical analysis software.

Analysis

Descriptive statistics were used to analyze the sample characteristics. Z test was used for hypothesis testing. Association of knowledge and ART adherence with demographic variable was analyzed using Chi square and Mann Whitney U test. Association of knowledge with adherence is analyzed using ANOVA. SPSS-16 software was used for data analysis

Results

A total of 84 PLHA were enrolled. Mean age was 39.45 years, with 67.86 % being male. The mean knowledge percentage score of the PLHA was 66.6% which falls in to good category. Majority 83.33% expressed that ART will help them to lead a healthy life. 82 % were aware that ART is a lifelong treatment but 15.47% expressed that it can be stopped on feeling better. Only 9% were able to name the ART drugs administered to them. High ART adherence (>95%) was seen in 19.05% and 50% of the study sample had moderate adherence (75%-95%).

Mean ART adherence was 80.35% with standard deviation of ±12.86. Socioeconomic status, age, gender, place of residence, distance travelled to ART center, duration of treatment etc had no effect on adherence. Knowledge regarding ART and drug adherence shows a highly significant association (p<0.0001) (Fig:1). PLHA reported busy (39.29 %), forget (35.71%), did not want others to see (26.19%), away from home (7.14%), feeling better (5.95%), ran out of pills (5.95%), long duration of treatment (4.76%) and side effects (2.38%) as the factors of poor adherence. (Fig:2)

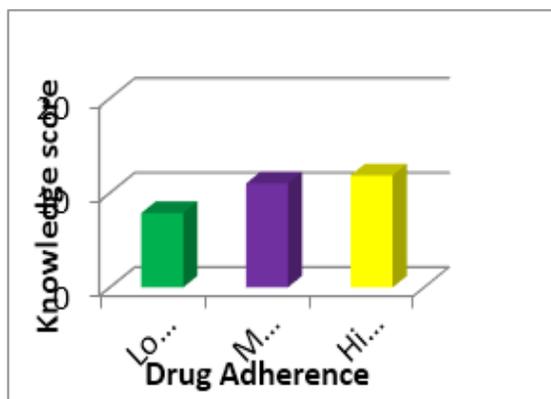


Figure 1: Bar diagram showing the association between mean knowledge and drug adherence

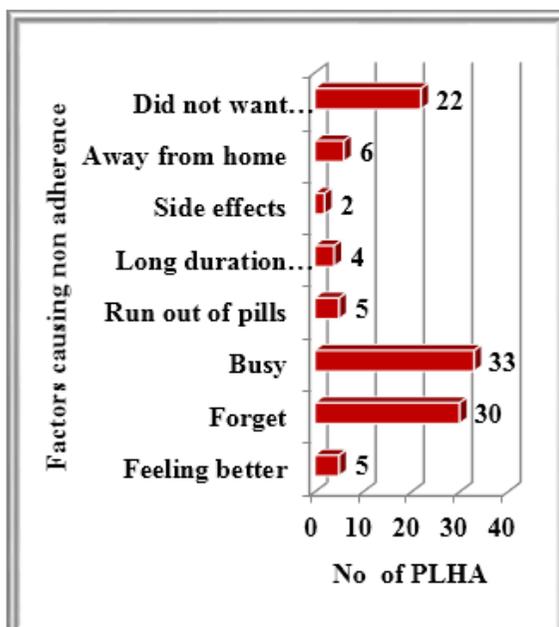


Figure 2: Bar diagram showing the distribution of sample as per the factors affecting ART adherence.

Discussion

When PLHA take their medications irregularly or when providers prescribe inappropriate doses or combinations of medications the virus is exposed to inadequate concentrations of antiretroviral medications. This in turn leads to ongoing viral replication and to the development of resistance to antiretroviral medications. Resistance to antiretroviral medications accounts for a large portion of treatment failures^{17,18}.

Out of total sample (n=84), 57 were male and 27 were female with a sex ratio of 0.47. This findings are in contrast with findings of Potchoo Y and Talam NC were 80% and 68% of the sample were females. In the present study males were more may be due to increased male exposure to disease, moreover the females are reluctant to treatment at initial phase.^{7,8}

The age of PLHA ranged between 18 to 58 years with an average age of 39.49 years. In a study conducted by Birbeck GL et al to assess ART adherence in three ART clinics of Rural Zambia the mean age was 39.7 years which is similar to the present study.⁹ Mean age was 39.98% in another study conducted by Cauldbeck M B et al in Bangalore. 50% were in age group 30- 40 years which is similar to the present study and indicates the high prevalence of HIV/AIDS in middle age group in India.¹⁰ In Talam NC et al study conducted in 2005 in Kenya, the mean age was 36.1 years.⁸ This indicate the high prevalence of HIV in middle age group as they are more exposed and also they are aware about the treatment opportunities available.

Data reveals that 60.71 % (51) were from nuclear family, 26.19% (22) from joint family and 13.1% (11) from extended family. 76.19 % (64) of the sample were from rural setting whereas only 23.81% (20) were from urban setting. This may also shows the trend of PLHA moving to farther places to avail services due to social stigma. Distance from home to ART centre was less than 10 km for 42.86% (36) of the sample whereas 29.76 % had to travel more than 20 km to avail the services. The mean distance from the ART centre was 23.16 Km. In the study conducted by Claudbeck M B et al revealed that 10% patients lived less than 50 km distance from ART clinic whereas 90% lived in a distance more than 50 km.¹⁰ In the present study even if more PLHA were (76.19%) were from rural setting, the average distance to ART centre was 23.16 Km which shows that the PLHA were from the developing villages in and around the municipal corporation in which the ART centre was placed.

Out of the four combination first line ART regime, PLHA in the study group were receiving three combinations ART regimen, they are 55 (65.48%) of the PLHA are on drug regimen Zidovudine+Lamivudine+nevirapine and 11(13.10%) on Zidovudine+lamivudine+Efavirenz combinations. 18 (21.43%) were receiving drug regimen Stavudine+Lamivudine+nevirapine . A cross sectional study conducted by Shah B et al (2006) a in Mumbai highlights that among 279 HIV infected patients 225(80.6%) were receiving three drug ART regimen.^{14,15,16} NACO has made three drug ART regimen compulsory for all, which is practiced in ART centers across the country.

Majority of the study sample, 60 out of 84 were in clinical stage II and III, 20.24% (17) PLHA were in clinical stage I whereas 8.33% (7) were in clinical stage IV (WHO). Base line mean CD4 count was 170.048 were as mean CD4 count at the time of study is 434.512 which shows an average increase in the CD4 count during the treatment period. Higher CD4 count acts as an indicator of good adherence.

Out of 84 PLHA, 69 knew that ART is lifelong treatment but 13 PLHA believed that it should be only taken till he/she feels better. 02 of the sample believed ART as a cure for HIV whereas 70 knew that ART will help them to lead a healthy life. In a study

conducted by Suneil R et al (2007) in India,¹¹ out of 1667 HIV positive persons surveyed 609 (36%) had heard of ART and 19% reported that ART could cure HIV whereas in this study only 2.3 % reported that ART can cure HIV.

In the present study 38 out of 84 expressed that they will transmit HIV to others in the same way as any other HIV positive individual whereas 38 believed that they will not transmit HIV as they are on ART.

Only 8 out of 84 PLHA were able to name the ART drugs administered to them. Study by Potchoo Y et al⁷ reveals that 55.6% knew the name of antiretroviral agents of regimens prescribed whereas in the present study majority were unable to name the drugs even though they were literate.

The mean adherence was 80.35% with a standard deviation of \pm 12.86%. In Potchoo Y et al study the average adherence rate was 89.8% of the total doses prescribed.⁷ Study conducted by Birbeck GL, 60% reported they were fully adherent. No trends were seen for education level, family income, distance travelled to clinic, time since diagnosis, or time on ART.⁹ In the present study also no trends were seen for demographic variables towards adherence. In a study conducted by Sarna A et al (2008) in India, mean self reported four day adherence for all the patients was 93.4% which is much higher than the present study.¹² This may be due to assessment of adherence using self report only which gives an adherence rate 10 to 15% higher than the actual adherence. Investigator in the present study assessed adherence using two methods- self report and pill count for accurate adherence measurement.

Statistical association between knowledge and adherence was highly significant ($p < 0.0001$). The mean knowledge regarding ART is associated with the adherence pattern of the PLHA. More the adherence, higher the mean knowledge score. This can also be compared to the study by Cauldbeck et al which show more representative of younger age group who have a better knowledge and are relatively adherent. In contrast to the findings, a study by Potchoo Y shows that there is no trend of education towards adherence.^{7,10} Present study shows a positive relationship between knowledge and adherence which may be related to the education of PLHA as literate were only included in the study.

Main factors of poor adherence reported were busy (39.29 %), forgetfulness (35.71%), did not want others to see (26.19%), away from home (7.14%), feeling better (5.95%), ran out of pills (5.95%), long duration of treatment (4.76%) and side effects (2.38%). Shah B et al (2006) cited reasons for missing doses were; ran out of pills (26.2%), travelling away from home (15.4%), felt sick or ill (11.5%), forgot (9.3%) and busy with other things (8.2%).¹² Talam NC et al, in his study reveals that 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%.⁸

Potchoo Y et al study reports forgetting (34.9%), travel (25.6%), cost of treatment (13.9%) and side effects (11.6%) as the main factors of missing at least one dose.⁷ Sarna A et al identified the reasons for non adherence were being busy, forgetting, being away from home and running out of pills. Fifty one respondents reported treatment interruptions for more than seven days due to financial difficulty, travel and side effects.¹³ Travel and the cost of treatment were not selected as the reasons for non adherence in the present study as the mean distance covered by PLHA was 23.16 km and the treatment was free of cost by NACP. This also highlights the high quality services rendered by Govt through ART centers located near to patients domicile.

As the main factors of non adherence found in the study were forgetfulness and busy, interventions has to be planned on reminding PLHA about medication at regular intervals. Most of the studies shown similar reasons for non adherence in varying ranges.

Conclusion

Health care providers need to take time to assess and support medication adherence to help the patient to fully benefit from ART. Many methods are used to assess adherence in which patients self report is the most simple and economical. Efforts must be made to increase the sensitivity of this tool for detecting non adherence by asking regularly about adherence in a non judgmental and collaborative manner.

Methods improving adherence like reminder system, buddy system and family support etc can also be incorporated. Assessment of adherence at regular interval is very important. Non adherence is a significant public health concern as it would speed up the development and transmission of drug resistant virus. Health administration system can adopt programs like DOT (Direct observed treatment) so that adherence is assured among PLHA. Public funds can be utilized towards the rectifying the major factors of non adherence like reminder system, home delivery of medicines and daily drug dispensing kit to all PLHA.^{19,20,21} Clinical settings can be modified with availability of transportation facilities, pleasant environment, less waiting periods and more link centers to improve ART adherence.^{22,23}

In this way adherence can be assessed, problems can be addressed, side effects can be dealt and non adherent behavior can be eliminated. This study should encourage the authorities and all the involved members of HIV/AIDS program to strengthen the counseling, education and information to PLHA in order to overcome the potential barriers of poor adherence.

REFERENCE

- National AIDS Control Organisation [online]. 2011 Aug [cited Sep 2011]; Available from: URL: <http://www.nacoonline.org/> | 2. Kounteya Sinha. NACOs success story, disagrees with no of patients, those treated. Sunday Times of India. 2011 Jun 05; p 14(col. 1). | 3. Pratt R, Nicola R, Heather L, Carol P, Franks P, Matthew H, et al. Adherence to antiretroviral therapy: appropriate use of self-reporting in clinical practice. HIV clinical trials 2001 Mar Apr ;(2)15228-4336 | 4. Simoni JM, Kurth AE, Pearson CR, Merrill JO, Frick PA. Self report measures of antiretroviral therapy adherence: A review with recommendations for HIV research and clinical management. AIDS behav 2006;10: 227-245 | 5. Gao X, Nau DP. Congruence of three self report measures of medication adherence among HIV patients. The Annals of Pharmacology. 2007 | 6. Chaiyachati K, Hirschhorn LR, Tanser F, Newell ML, Bamighausen T. Validating Five Questions of Antiretroviral Nonadherence in a public sector treatment program in rural South Africa. J AIDS patient care 2011 Jan 26;4(11):17-23. | 7. Potchoo Y, Kpatcha T, Balogou A, Pitche VP, Guissou IP, Kassang EK. Knowledge and adherence to antiretroviral therapy among adult people living with HIV/AIDS treated in the health care centers of the association "Espoir Vie Togo" in Togo, West Africa. BMC Clinical Pharmacology 2010. 10:11. | 8. Talam NC, Gatongi P, Rotich J, Kimaiyo S. Factors affecting antiretroviral drug adherence among HIV/AIDS adult patients attending HIV/AIDS clinic at Moi Teaching and Referral Hospital, Eldoret, Kenya. PMID: 19024414 | 9. Birbeck GL, Chomba E, Kvalsund M, Bradbury R, Mangombe C, Malama K, et al. Antiretroviral Adherence in Rural Zambia: The First Year of Treatment Availability. [Online] The American Society of Tropical Medicine. [Cited on December 30, 2008] Available from URL: <http://www.ajtmh.org/content/80/4/669.full> | 10. Cauldbeck MB, O'Connor C, O'Connor MB, Saunders JA, Rao BM, Praveen Kumar NK, et al. Adherence to anti-retroviral therapy among HIV patients in Bangalore, India. AIDS Res Ther 2009 Apr 28;6:7. | 11. Suneil R. Ramchandani, Shruti HM, Dattatray GS, Satish BV, Ved PP, et al. AIDS Patient Care and STDs. February 2007, 21(2): 129-142. | 12. Shah B, Walshe L, Saple DG, Mehta AH, Ramnani JP, Kharkar RD, et al. Adherence to Antiretroviral therapy and virologic suppression among HIV infected persons receiving care in private clinics in Mumbai, India. Proceedings of the 16 th international AIDS conference; 2006 Aug; Toronto, Canada. | 13. Sarna A, Pujari S, Sengar AK, Garg R, Gupta I, Dam JV. Indian J Med Res 127, January 2008, pp 28-36 | 14. Sterne JA, May M, Costagliola D, De Wolf F, Phillips AN, Harris R, et al. Timing of initiation of antiretroviral therapy in AIDS-free HIV-1-infected patients: a collaborative analysis of 18 HIV cohort studies. Lancet 2009 Apr 18; 373(96722):1314-6. | 15. Thompson MA, Aberg JA, Cahn P, Montaner JS, Rizzardini G, Teletani A, et al. Antiretroviral treatment of adult HIV infection: 2010 recommendations of the international AIDS society-USA panel. AIDS research consortium of Atlanta, Georgia, USA. | 16. Rutherford G, Sangani P, Kennedy GE. Three- or four- versus two-drug antiretroviral maintenance regimens for HIV infection. Cochrane Database of Systematic Reviews 2003, Issue 4. Art. No.: CD002037. DOI: 10.1002/14651858. CD 002037 |