



FACTORS INFLUENCING ADHERENCE TO ANTI RETROVIRAL THERAPY IN MAHARASHTRA

Community Medicine

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ABSTRACT

Introduction- Clinical outcomes of ART depend mainly on the adherence of patients to antiretroviral therapy as adherence is essential to reduce the multiplication of the virus and improve disease outcomes. Various socio demographic factors influence the adherence to ART. Objective of the study was to find out the enabling factors for medication adherence to ART. **Methodology-** A descriptive cross-sectional research study was conducted for a period of one year at ART center of DVVP Pravara Medical Trust, Loni, Ahmednagar district in Maharashtra. Seventy patients were interviewed to know the socio demographic profile and enabling factors in adherence to ART. **Results-** Majority of patients were above the age group of 40 years and the duration since diagnosis of HIV was over 5 years. Most of the patients belonged to either middle (48%) or upper (50%) socio-economic class. Large number of patients (83%) were educated up to 10th class and mainly belonged to rural area. Majority (78%) revealed that they contracted disease through hetero sexual contact. Seventy eight percent women had high level of adherence. Self-motivation, family support and longer duration of therapy helped HIV affected persons to adhere to ART. Keeping alarm for reminder to take medication and social support were not observed in the present study. Traveling away from home, transportation problems, forgetfulness, busy schedule, lockdown were disabling factors for ART adherence. **Conclusion-** HIV infection is seen equally in both genders in population above 40 years of age. Self-motivation, family support and longer duration of therapy helped PLWHA to adhere to ART.

KEYWORDS

Anti retroviral therapy adherence, HIV infection, Enabling factors for adherence to ART

INTRODUCTION

The clinical outcomes of ART depend mainly on the adherence of patients to antiretroviral therapy. Studies show that adherence to antiretroviral therapy is essential to reduce the multiplication of the virus and improve disease outcomes.¹ Studies indicate that > 95% adherence to therapeutic schemes is required for an HIV infected patient to reach full viral suppression.²⁻⁵ However, adherence to therapeutic regimens might be difficult for many reasons. For example, the side effects of HIV medicines could pose challenges on strict adherence. Besides, the medication dosing schedule might not fully adjust with the patient's daily activities.^{6,7} Poor adherence to active antiretroviral therapy diminishes the effectiveness of ART and accelerates viral dissemination and drug resistance. The reported figures for ART adherence vary between 15% to 75% in published literature^{8,9}.

In this context, a thorough understanding of factors influencing ART adherence allows for targeted interventions within the context of health care services in public hospitals areas in order to keep patients in care and adhering to treatment in the early stages of ART.¹⁰ Present study was conducted to know the socio demographic profile of the patients and factors influencing the adherence to Anti-retroviral therapy (ART) in rural part of India.

METHODOLOGY

Descriptive cross-sectional research study was carried out for a period of one year at ART center of DVVP Pravara Medical Trust, Loni, Ahmednagar district in Maharashtra. Study population included 70 patients registered at ART center. Sample size was calculated by formula $n = \frac{z^2 p q}{d^2}$ ($z=1.96$ $p=76\%$ $q=100-76$), where, $z=1.96$, p =value from previous studies (89,63), $q=100-p$, d =absolute precision=0.1. Following variables were studied

a-Socio-demographic factors– age, gender, marital status, residence, occupation, education, total family income.

b-History of the case- Diagnosed since, taking treatment since, HIV status of the spouse, treatment regimen, treatment regularity, comorbidities.

c-Adherence- number of tablets prescribed (formula: Total number of pills taken / total number of pills prescribed x 100)

d-Enabling factors for (receiving treatment) adherence- Keeping reminders, family support and responsibility, social support, beneficial impact of ART, dispensing medicines for long time.

e-Factors influencing adherence- side effects, religious beliefs, traveling away from home, transportation problems, lost or stolen pills, pill burden, forgetfulness, shortage of medication, busy schedule,

social stigma, believing that pills are toxic, spoilt pills, health issues, alternative therapies, lockdown, other reasons.

Inclusion Criteria

a-Patients willing to participate in the study, b-Patients taking treatment for more than 1 year, c-Age more than 18 years.

Exclusion Criteria

patients not willing to participate in the study

Data was collected through personal interview and review of documents maintained at ART center. Data was compiled and analyzed using in Epi-info software. Interview was conducted by the principal investigator with the participants to know the treatment history and various enabling and limiting factors or challenges they may be facing while taking treatment and adhering to treatment protocols. Detailed socio demographic information of individual study participant was collected in a structured proforma. Statistical analysis was done using Chi square test, Student t test. A pilot study was conducted for validation, practicality and applicability of the data collection too. The study was approved by the SPHSM Institutional Research Committee vide letter No. PIMS/SPHSM/RC/2021/07; Dated- 25/10/2021. All the respondents of the study were clearly explained about the purpose of the study and ensuring the confidentiality. Written informed consent was taken. Participation in the research study was voluntary and their identity was protected. Opinions, expressions of the participants were respected, honestly documented and appreciated. Respondent had option for not answering any question from the study. The rules of Intellectual Property Rights were followed.

RESULTS

In the present study, there were 35 female (50%) and 35 male patients (50%). Among female patients, 34 were married, of which 23 were widow. Among male patients, 31 were married, of which 3 were widow. It was observed that 50% of patients belonged to upper socio-economic class and 48% belonged to upper middle socio-economic class and only 2% belonged to lower socio-economic class as per Revised BG Prasad Socioeconomic Status Classification, January, 2022. There was equal gender distribution among the study participants (50% each). Highest number of patients (49%) were in the age group of 40-49 years. Next common age group was above 50 years (31%). Only 20% patients were below 40 years of age. It was observed that 67% of patients belonged to rural area and remaining 33% to urban area. It was observed that 83% of patients had completed education only up to 10th class, 14% up to 12th class and only 3% had done graduation. The occupational background of patients revealed that 34% were involved in farming, 23% were private employees, 17% were

daily labourer. Other patients were either home makers (13%), drivers (4%), merchants (3%) etc. Tobacco chewing in various forms was the commonest addiction found (53%) patients. Alcohol addiction was observed in 16% patients, where as 46% patients did not report any addiction. Majority of patients (78%) had contracted HIV infection through heterosexual contact. Other modes of contracting infection were vertical transmission (9%), blood transfusion (4%), surgical procedures or needle stick injuries (3%) It was revealed that the duration of HIV illness since diagnosis was more than 10 years in 53% cases, whereas, duration was in between 5 and 10 years in 30% and less than 5 years in 17% patients. It was observed that in 64% of patients, the spouse was seropositive for HIV, where as in 28% cases, the spouse was seronegative for HIV infection. Majority of patients (87%) were receiving TLD regimen, where as 4% were on ZLN regimen. Out of 70 patients, 41% had 2 children, 27% had 3 children, 21% had one child and 10% had no child. Majority of patients (76%) had family members between 2 and 5, whereas 20% had more than 5 family members. Only 4% patients were staying alone in the family. There was no associated comorbidity in 76% patients. Most of the patients (91%) were taking single tablet per day. Only 7% and 2% patients were taking 2 or 3 tablets per day respectively. Among the enabling factors for taking regular medication were family support (80%), feeling of beneficial impact of regular medication on life (97%), longer duration of therapy (64%), where as social support (24%), keeping alarm clock reminder (7%) were not the factors responsible for regular medication intake in patients.

DISCUSSION

V Gordillo et al studied socio-demographic and psychological variables influencing adherence to antiretroviral therapy in a cross-sectional study in a reference HIV/AIDS institution. They reported that adherence to antiretroviral therapy was better among subjects aged 32-35 years and with a self-perceived good social support¹¹. C A T Pinheiro et al studied factors associated with adherence to antiretroviral therapy in HIV/AIDS patients in a cross-sectional study. They reported in univariate analysis, the odds of adherence increased with self-efficacy (a person's conviction that he/she can successfully execute the behavior required to produce a certain desired outcome) in taking medications as prescribed. The odds were lower for taking antiretroviral medications >4 times a day and higher for patients with 8 years of schooling. In the multivariate analysis, self-efficacy and taking medication >4 times a day were independently associated with adherence. Self-efficacy was the most important predictor of adherence, followed by number of times antiretroviral medication was taken per day. Among socio-demographic and clinical variables, only the number of years of schooling was associated with adherence. They suggested that the motivational interventions based on self-efficacy may be useful for increasing treatment adherence.¹² Xiaoli Wang et al studied factors associated with adherence to antiretroviral therapy among HIV/AIDS patients in rural China in a cross-sectional study on HIV-infected adults receiving free antiretroviral therapy (ART). Study reported that regular ART adherence education and counseling, improved training on medication, self-management skills, adherence monitoring should be priority strategies for improving adherence to ART among HIV/AIDS patients who receive free ART.¹³

Varadharaj Sakthivel et al. reported that the factors contributing to high adherence level were confidentiality and trust among health workers, concerned about their own health, understanding about the prescribed drugs, idea about disease progression, effectiveness and knowledge of anti-retroviral drugs.¹⁴ Kuhlula Mabunda et al published their study on determinants of poor adherence to antiretroviral treatment using a combined effect of age and education among human immunodeficiency virus infected young adults. A total of 281 participants were enrolled with 163 (58.0%) females and more than three quarter, 222 (79.0%) between the ages of 18 and 29 years. The overall ART adherence stood at 87.2% representing 245 participants. Non-adherers to treatment, 36 (12.8%); patients reported no reason (3.9%), forgetting (3.2%), feeling good (3.2%), fear and running out of treatment (2.5%) as some of the reasons for not taking treatment within the three days prior to data collection.¹⁵

A cross-sectional study, concluded that regular patient education and counseling regarding the usage of memory aids and abstinence from alcohol could be useful for adherence and long-term success of ART among PLHIV. Lack of transport fare (2.69 ± 1.36), long-distance to clinic (2.82 ± 1.26), health workers' poor attitude (2.74 ± 1.28), and lack of partners' and parents' support (2.57 ± 1.05) affected adherence

negatively while ease in renewing prescription and minimal side effects of drugs enhanced adherence. Enfuvirtide (21.1%) and Lamivudine (17.4%) were drugs that were mostly skipped.¹⁶

In a study designed to describe specific barriers and facilitators to treatment adherence among youths in a large regional HIV clinic in southwestern Uganda, main facilitators were; perceived usefulness of HIV medications, availability of free services and social support. Study concluded that youths aged 15-24 have challenges with ART associated treatment burden and fear to disclose their HIV status because of the resultant stigma from their communities.¹⁷

With the increased availability of safe antiretroviral therapy in recent years, achieving optimal adherence and patient retention is becoming the biggest challenge for people living with HIV (PLWH). Study concluded that stigma and discrimination, fear of HIV disclosure, economic constraints, forgetfulness, religion (Ramadan, spiritual healing), adverse drug reactions, lack of social support, alternative therapies, and COVID-19-related lock-down and fear of lesser COVID-19 care due to HIV associated stigma were identified as barriers affecting the retention in HIV care. At the same time, positive social support, family responsibilities, use of reminders, the beneficial impact of ART, and initiation of telephone consultations, courier delivery, and long-term delivery of antiretrovirals during COVID-19 were identified as facilitators of HIV retention.¹⁸

The observations of the present study about positive influence of family support, educational level and counselling by ART staff and health care workers correlate with the observations of other researchers. Among the enabling factors for taking regular medication were family support (80%), feeling of beneficial impact of regular medication on life (97%), longer duration of therapy (64%), whereas, social support (24%), keeping alarm clock reminder (7%) were not the factors responsible for regular medication intake in patients. These observations were contradictory to observations reported by other researchers.

CONCLUSION

HIV infection is often seen in both the genders equally in population above 40 years of age. Affected population is often less educated, with rural background. Heterosexual mode of transmission is the commonest mode among study population. Over all compliance to ART is satisfactory. Self-motivation, family support and longer duration of therapy help HIV affected persons to adhere to ART. Keeping alarm for reminder to take medication and social support were not observed in the present study. Regular counselling of people living with HIV by health care workers and staff at ART centers along with family support plays important role in adherence to the therapy.

REFERENCES

1. Jean B, Nachega MH, Dowdy DW, Chaisson RE, Regensberg L, Maartens G. Adherence to nonnucleoside reverse transcriptase inhibitor-based HIV therapy and Virologic outcomes. *Ann Intern Med*. 2007; 146:564-73.
2. David L, Paterson M, BS, FRACP, Swindells S, Mohr J, MSW, Brester M, RN, Emanuel N, Vergis, MMW CS, Singh N. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. *Ann Intern Med*. 2000; 133(1):21-30.
3. Sharon Mannheimer GF, Matts J, Child C, Chesney M. The consistency of adherence to antiretroviral therapy predicts biologic outcomes for human immunodeficiency virus-infected persons in clinical trials. *Clin Infect Dis*. 2002; 34(8):1115-21.
4. Howard AAA, Julia H, Lo Y, Vlahov D, Rich JD, Schuman P, Stone VE, Smith DK, Schoenbaum EE. A prospective study of adherence and viral load in a large multi-center cohort of HIV-infected women. *International AIDS society*. 2002; 16(16):2175-82.
5. Edward L. Machtiger DRB. Adherence to HIV antiretroviral therapy. University of California san Francisco: HIV InSite Knowledge Base chapter; 2006.
6. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents: AIDS info; 2016 [updated July 14, 2016].
7. Kenneth L. Schaefer M, FACP, CPC. The Importance of Treatment Adherence in HIV. *Am J Manag Care*. 2013; 19(12): S231-7.
8. Li JZ, SG HR, Heiseya A, Bangsberg DR, Kuritzkesa DR. Incomplete adherence to antiretroviral therapy is associated with higher levels of residual HIV-1 viremia. *AIDS*. 2014; 28(2):181-6.
9. ID JAGS, de Brito AM, da Silva CAL. Factors associated with non-adherence to antiretroviral therapy in adults with AIDS in the first six months of treatment in Salvador, Bahia state, Brazil. *Cad Saude Publica*, Rio de Janeiro. 2015; 31(6):1-11.
10. McMahon JH, Elliott JH, Bertagnolio S, Kubiak R, Jordan MR. Viral suppression after 12 months of antiretroviral therapy in low- and middle-income countries: a systematic review. *Bull World Health Organ*. 2013; 91(5): 377-385E.
11. V Gordillo, J del Amo, V Soriano, J González-Lahoz Sociodemographic and psychological variables influencing adherence to antiretroviral therapy. *AIDS*, 1999 ; 13(13):1763-9
12. C A T Pinheiro, J C de-Carvalho-Leite, M L Drachler, V L SilveiraBraz. Factors associated with adherence to antiretroviral therapy in HIV/AIDS patients: a cross-sectional study in Southern Brazil *J Med Biol Res*. 2002; 35(10):1173-81.
13. Xiaoli Wang, Zunyou Wu Factors associated with adherence to antiretroviral therapy among HIV/AIDS patients in rural China *AIDS*. 2007 Dec; 21 Suppl 8: S149-55.
14. Varadharaj Sakthivel, Vembu Krishnasamy, Vadivelan Mehalingam, Level of Medication Adherence and Its Associated Factors among Patients Receiving Antiretroviral Therapy at a Tertiary Care Hospital in South India *J Caring Sci*. 2020

- :9(2):93-97.
15. Kuhlula Mabunda , Emery Ladi Ngamasana , Joseph Omoniyi Babalola , Moleen Zunza , Peter Nyasulu Determinants of poor adherence to antiretroviral treatment using a combined effect of age and education among human immunodeficiency virus infected young adults attending care at Letaba Hospital HIV Clinic, Limpopo Province, South Africa. *Pan Afr Med J.* 2019 Jan 18;32:37
 16. Arjun Banagi Yathiraj, Bhaskaran Unnikrishnan et al Factors Influencing Adherence to Antiretroviral Therapy among People Living with HIV in Coastal South India *Journal of the International Association of Providers of AIDS Care* 2016; 15(6) 529–533
 17. Jjumba I, Kanyesigye M, Ndagijimana G, Wattira J, Olong C, Olok RA, Beebwa E, Muzoora C. Perceived barriers and facilitators to antiretroviral therapy adherence among youth aged 15-24 years at a regional HIV clinic in South-Western Uganda: a qualitative study. *Afri Health Sci.* 2022;22(2): 54-62.
 18. Ahmed A, Dujaili JA, Jabeen M, Umair MM, Chuah L-H, Hashmi FK, Awaisu A and Chaiyakunapruk N. Barriers and Enablers for Adherence to Antiretroviral Therapy Among People Living With HIV/AIDS in the Era of COVID-19: A Qualitative Study from Pakistan. *Front. Pharmacol.* 2022;12: 807-812.