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Original Research Article

Determinants of adherence to antiretroviral therapy among people living with HIV/AIDS in Chhattisgarh, India

Mayank Kumar Khede[1], Pragyan Paramita Parija[2]*, Manisha Ruikar Madhukar[2], Shiv Kumar Bhinjwar[1]

[1]CST Division, Chhattisgarh State AIDS Control Society, Raipur, Chhattisgarh, India
[2]Department of Community and Family Medicine, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India

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***Correspondence:**
Dr. Pragyan Paramita Parija,
E-mail: pragyanparija@gmail.com

ABSTRACT

Background: Achieving the WHO 2020 treatment goals will not only depend on access to HIV treatment, but also on good adherence. Chhattisgarh SACS under guidance of CST division NACO and community and family medicine department AIIMS, Raipur undertook this study to investigate the major factors that influence the adherence of PLHIV visiting ART centres of Chhattisgarh.
Methods: From five ART centres, 415 participants were interviewed through simple random sampling method through a semi structured interview schedule.
Results: We found that 346 of the 415 (83.3%) patients had ≤95% adherence to ART on the basis of pill count method. Major proportion (90.0%) of patients were on TLE regimen, among them (74.4%) were non-adherent. An association was found between health condition of patient, poor life style and adherence rate. Three-month drug dispensation was recommended by most of the participants to improve adherence.
Conclusions: Multiple months drug dispension along with other innovative approaches should be tailored made to improve the adherence and compliance among PLHIV individuals.

Keywords: Adherence, HIV, AIDS, Compliance, Antiretroviral therapy

INTRODUCTION

HIV is a chronic lifelong illness. Therefore, People living with HIV (PLHIV) have to be under anti-retroviral medications for their entire life. In 2017, 36.9 million people were living with HIV (Human immunodeficiency virus) globally. Among them, only 21.7 million people were receiving ART by the end of 2017. India, with a total population of approximately 1.4 billion, the estimated adult (15-44 years) prevalence of HIV is 0.21%.[1,6] A continued expansion of the ART program is required to improve adherence to treatment and retention in care to meet United Nations Programme on HIV/AIDS (*UNAIDS*) and National AIDS Control Programme (NACP) goals of 90-90-90 i.e.; 90% of all people with HIV to be diagnosed, 90% of people with HIV diagnosed to receive ART, 90% of those on ART to have suppressed viral load by 2020.[1] It has been observed that starting treatment in patients at an advanced stage with very low CD4 count fails to halt the underlying morbidity and mortality while starting ART early, when opportunistic infections are still absent, gives better survival and quality of life.[2,3] India has aggressively scaled up access to Anti-retroviral therapy (ART) for HIV in recent years. In April 2017, the NACO officially adopted a treat all policy of offering treatment to all individuals with HIV regardless of their CD4 count and WHO clinical staging. With this recent change in approach in policy, adherence to ART treatment for viral suppression to achieve the third goal of optimal viral suppression is the key.

Chhattisgarh is one of the Empowered action group (EAG) states located in Eastern India with a higher proportion of economically and socially disadvantaged population. In Chhattisgarh state, over 14,000 people were on ART, and the adult HIV prevalence rate is 0.13% with estimates of 26,206 PLHIV in 2019. The epidemic is concentrated more in rural areas and among key populations (people who inject drugs, men who have sex with men, transgender persons, sex workers and prisoners).

The NACP and partner organizations have made important gains in enhancing the state's HIV response. Access to HIV services has been made available through five ART initiation sites and 22 decentralized link ART centres to facilitate the initiation and follow-up care for patients.[4]

HIV treatment coverage has increased after NACO adopted 'Test and treat policy', initiating ART and retaining 67% of the population under regular treatment currently. 75% were aware of their HIV status till June 2019. New HIV infections have decreased by 4% as per NACO HIV sentinel surveillance (HSS) data, 2017. Chhattisgarh is now transitioning to a decentralized response that integrates HIV care into existing health services and improves access to treatment for the most prevalent co-morbidities. Despite these achievements, the HIV treatment gap in Chhattisgarh is still a matter of concern.

Achieving the WHO 2020 treatment goals and the goal of ending the AIDS epidemic as a public health threat by 2030 will depend on the success of current HIV treatment programs. Such success will not only depend on access to HIV treatment but also good adherence to ART and retention in care, which is necessary to achieve viral suppression, to prevent viral failure, diminish viral transmission, and reduce HIV/AIDS-related deaths.[4] However, the factors that hinder adherence to ART in Chhattisgarh are not well documented.

For ART treatment programs in Chhattisgarh to be successful, it is critical to identify barriers to adherence, then determine and implement appropriate measures to promote and improve adherence. Nearing the limits of its operational capacity to care for the large cohort on ART and an increasing number of severely sick new patients, Chhattisgarh SACS under the guidance of CST division NACO and community and family medicine department AIIMS, Raipur undertook this study to investigate the major factors that influence the adherence of PLHIV visiting ART centres of Chhattisgarh.

METHODS

Study design

This cross-sectional study was conducted in the state of Chhattisgarh from August to November 2019. There are five ART centres and twenty-two Link ART centres which provide treatment and counselling for PLHIV.

Study population and eligibility criteria

PLHIV, who were 18 years and above, on ART for at least 3 months and who gave written consent were included as the study participants.

Sample size

The sample size was calculated by taking 57% from previous patient adherence to ART among PLHIV in state of Jharkhand, the adjoining state with an absolute precision of 5% and confidence interval of 95%.[5] After adding a 10% non-response rate, the sample size was found out to be 415.

Sampling procedure

The samples were collected proportionately from each of the five ART centres. Participants were selected through simple random sampling by using a sample frame of registration record of the patients.

Data collection and analysis

Those who agreed to participate in the study were interviewed by the counsellor of respective ART centres through a semi-structured questionnaire for 15-20 min. The questionnaire covered socio-demographic profile and ART adherence of participants. Counsellors were trained for data collection through google survey form and interview techniques before the study by the principal investigator. The data consistency and completeness were checked once weekly by the principal investigator. Adherence was calculated by dividing the number of pills taken by the number of pills prescribed. A participant was defined as non-adherent who was being on ART for at least 3 months, having less than 95% adherence. Data were collected through google form which extracted directly to Microsoft Excel (Microsoft, Redmond, WA, USA) and was analysed through SPSS 20.0 (IBM Corp, version 21.0, Armonk, NY, USA). Statistical significance was set at p value <0.05.

Ethical consideration

This study has been conducted within the boundaries of the Helsinki Declaration. Permission to conduct the study was obtained from Project director Chhattisgarh State Control Program, Raipur, Chhattisgarh. The purpose of the study was explained to each participant before the interview and their confidentiality was maintained. They were assured that their responses would be anonymous would not hamper their treatment or services provided by the centre and were free to withdraw from the study at any point.

RESULTS

Only 415 PLHIV were interviewed through counsellors posted at five ART centres of state of Chhattisgarh to assess their ART adherence level and factors associated to non-adherence. Table 1 shows patient related factors

determining adherence to ART. The mean age of study participants was 34±5 years. Majority of them were above 30 years of age (54.2%). In our study majority 225 (54.2%) were males, 187 (45.1%) were females and rest 3 (0.7%) were transgender. More than half (54.6%) of respondents were from rural area. 34.2% respondents were educated up to primary school followed by 21.9% were illiterate.

75% of the PLHIV were married. On univariate analysis, marital status, age, education, residence and gender of study participants showed no significant effect on the adherence rate. There was no association found between disclosure of status to family members and adherence rate (p=0.35). The study data revealed that 40 % of the study subjects alive on ART accepted that they are healthier before or at the start of ART and not taking regular ART reporting 92% reporting poor adherence. An association was found between the health condition of the patient and the adherence rate (p=0.01) (Table 1). We found that patients who were having a poor lifestyle (alcohol, smoking) are more at risk of becoming non-adherent as compared to patients having a healthy lifestyle who were on ART (p=0.02) (Table 1). Medication-related factors determining adherence to ART are shown in Table 2. In this study, we found that 346 of the 415 (83.3%) patients had ≤95% adherence to ART based on pill count method as reported in their white treatment card of ART. Major proportion (90.0%) of patients were on TLE (Tenofovir-Lamivudine-Efavirenz) regimen, among them (74.4%) were non-adherent. An association was not found between side effects and adherence rate (Table 2) and 76% of patients who faced side effects during ART reported non-adherent, in this study we didn't find any significant relationship between duration of ART, CD4 count and co-infections (Table 2).

Out of 94 participants encountered side effects after ART initiation, only 20 individuals were reported non-adherent due to side effects only but others were non-adherent due to reasons along with side effects. Multiple reasons were cited by the respondents for non-adherence to ART. Among them, away from home followed by busy in other work at the time of the due date of ART visit were found out to be the most common reason for missing out on pills. 128 (30%) patients, accepted that their occupation timing remains a major factor affecting their timely visit to ART centre. (Table 3). To improve adherence to ART, the respondents were asked about two mediums (Three-month drug dispensation and mobile message reminder) Three-months drug dispensation was recommended by most of the participants to improve their adherence.

Table 1: Patient related factors determining adherence to ART (n=415).

Variables	Total (N)	Adherent	Non-adherent	P value
Age group (years)				
<30	190	33	157	0.92
>30	225	30	195	
Sex				
Female	188	32	156	0.41
Male	226	37	189	
Transgender	01	00	01	
Marital status				
Married/cohabiting	304	56	248	0.10
Staying single	111	13	98	
Residence				
Rural	227	37	190	0.84
Urban	188	32	156	
Education				
Illiterate	120	14	106	0.50
Literate	295	55	240	
Condition of health at start of ART				
Healthy	162	07	155	0.01
Unhealthy	253	62	191	
Alcohol consumption				
Yes	91	08	83	0.02
No	324	61	263	

Table 2: Medication related factors determining adherence to ART (n=415).

Variables	Total	Adherent	Non-adherent	P value
ART regimen				
TLE regimen	375	66	309	0.10
Other regimen	40	3	37	
Duration of ART (months)				

Continued.

Variables	Total	Adherent	Non-adherent	P value
<6	17	4	13	0.35
>6	398	65	333	
Side-effects encountered				
Yes	97	23	74	0.10
No	318	46	272	
CD4 count before initiation of ART				
≤200	51	10	41	0.54
>200	364	59	305	
Taking ATT				
Yes	87	10	77	0.14
No	328	59	269	

Table 3: Barriers to ART Adherence besides medication related factors (n=415).

Reasons for non-adherence	Frequency	Percentage
Forgot	52	13
Busy	84	20.2
Away from home	154	38
Change in duty hours	12	2.9
Lack of money to arrive at ART centre	23	5.5
No company to come to ART centre	31	7.4
Others	59	14

Table 4: Perceptions to improve ART adherence among participants (n=415).

Mediums to improve adherence	Frequency	Percentage
Daily text messages or phone calls		
Yes	219	52.77
No	196	47.22
Three months dispensation of drugs		
Yes	400	96.3
No	15	3.6

DISCUSSION

The present study has attempted to identify the major difficulties faced by ARV users among a representative sample of PLHIV accessing care for HIV. It was observed from the available data of all five ART centres that the proportion of HIV positive patients reporting adherence rate of ≤95% was 83.3%. These findings are in accordance with a study done by Achappa et al in South India.[6] A systemic review conducted by Mhaskar et al in India, found that about 70% reported adherence.[7] In a study conducted in Malawi, 70% of patients had adherence rate >90%, and a study conducted in another sub-Saharan African country reported that 52% of patients showed adherence of >80% based on a pharmacy dispense records.[8] A meta-analysis of 27 studies from 12 sub-Saharan African countries and 31 North American studies revealed that 77% of HIV-infected individuals achieved adequate adherence based on the criteria used in the respective studies; in contrast, only 55% of HIV-infected individuals did in North American studies.[9] A study in France reported that 65.2% of HIV patients showed adherence of >80%.[10] Apart from this, a study conducted in high-income country USA revealed an adherence of >90% in only 38% of the study participants.[11] The difference in adherence rates might be due to the differences in the methodology of measurement in various studies across the countries.

Gender was not found to have any positive significant association with adherence in our study. In contrast to our findings, association with gender was found by Lal et al.[12] Similar result showing association of gender and adherence is well explained by Saha et al.[13] Education status of PLHIV showed no significant relationship with non-adherence in our study, a similar finding was also reported by Cauldbeck et al.[14] The study data revealed no significant association between drug adherence and age, gender, education status, marital status. Similar results were also obtained by Mehta et al and Rajesh et al in which no association was established to the similar socio-demographic variables and adherence.[15,16] Present study result revealed a significant association between adherence rate of ≤95% and health status during the start of ART.

ART was freely available from government health centres to the respondents in this study. Cost regarding treatment was not found to be a barrier for medication adherence. The results from a systematic review from India showed

that provision of medications free of charge was associated with a probability of achieving higher adherence.[7]

Association between opportunistic infection and adherence to ART have also been reported by Saha et al.[13] The present study also shows a statistically significant positive association between adherence, ART Regimen and side effects of ART. This finding is in accordance with other studies.[17-25] PLHIV working away from home was found to be the major reasons among patient missing their ART refill and not visiting the ART centre on the due date. This can be mitigated by transferring out or registering the patients to link ART centres closer to their places of work. Multiple month dispensation (MMD) of ART was accepted by the majority of patients which will help them to improve their adherence as occupation timing and away from home remains major barrier affecting adherence of PLHIV in the state.

Limitations

As it is a cross-sectional study, this study cannot be generalisable to whole PLHIV population. Further qualitative studies are necessary to investigate reasons for poor adherence in the state of Chhattisgarh among PLHIV.

CONCLUSION

Identifying and evaluating the problems faced by ARV drug users can foster the achievement of ART related goals and addressing ART related problems rationally. Effective and appropriate monitoring of non-adherence behaviours can help patients increase adherence level fostering improvement in treatment outcome in addition to the continuum of care and viral suppression. In conclusion, for maximizing the benefit of ARV therapy, education on medication adherence for PLHIV is a must along with proper preparedness counselling before initiation of ART. Appropriate social policy and development of a supportive environment for PLHIV can be considered beneficial for improvement in adherence rate of PLHIV, CST services have to be made available in all districts for improving ART coverage. Policymakers must work toward guidelines that encourage patients to achieve optimal adherence levels. Education program, proper preparedness and counselling should be planned to prevent Loss to follow up (LFU) and miss and to achieve optimal adherence to ART treatment for the achievement of NACO 90-90-90 targets. Furthermore, policymakers should increase the number of link ART in the state, or dispensing through community care centres or TI site along with implementation of differentiated care drug delivery models in ART of state. As patients agreed that MMD will help them to improve adherence and it will ultimately improve the quality of services and retention in ART care. The new regimen can be introduced having lesser side effects, better efficacy and viral suppression as side effects of ART remain a key barrier affecting adherence to patients, innovative approach like ART adherence clubs, Community ART refills group [CARG], self-verified adherence can also be implemented to improve the adherence level of PLHIV. Further longitudinal studies are mandated for timely detection of non-adherence, appropriate monitoring and increasing adherence of patients.

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