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Level of Adherence to Antiretroviral Therapy and Its Determinants among People Living With HIV/AIDS Accessing Services at Tertiary Hospital -ART Centre

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ABSTRACT

Introduction: There has been a dramatic reduction in Human Immunodeficiency Virus related morbidity and mortality due to Anti Retroviral Therapy (ART). Adherence to the Highly Active Antiretroviral Therapy regimen is critical for success of Antiretroviral Therapy.

Methodology: A cross-sectional descriptive study was conducted at Anti Retroviral Therapy centre attached to tertiary care hospital. Sample size of 110 was derived & those satisfying inclusion criteria were interviewed using semi- structured questionnaire.

Results: 54.5% of respondents were males. More than half of them were in age group of 40-59 years. 27.2% travelled more than 100 Kms to access the service. It was observed that 94.5%, 84.5%, 83.6% & 89.1% reported > 95% adherence in previous 4 days, one week, 1 month & 3 months respectively. Statistically significant association was observed between the distance travelled for availing Anti Retroviral Therapy services and the level of adherence.

Conclusion: A good level of adherence was observed which could be further improved by counseling and additional support. Distance travelled was the significant barrier in accessing the services which can be overcome by making services decentralized and by addressing the stigma for utilizing services in nearby centres.

Key words: Anti Retroviral Therapy, HIV, Adherence.

INTRODUCTION

Acquired immune deficiency syndrome (AIDS) is now considered as a manageable chronic illness. There has been a dramatic reduction in Human Immunodeficiency Virus (HIV) related morbidity and mortality due to Antiretroviral Therapy.[1] Adherence to the Highly Active Antiretroviral Therapy (HAART) regimen appears to be the single most important variable that predicts a patient's ability to achieve and maintain suppression of HIV viraemia to below the level of detection and is thus critical for success of HAART.[2]

Adherence is defined as a patient's ability to follow a treatment plan, take medications at prescribed times and frequencies, and follow restrictions regarding food and other medications.[3] Studies indicate that > 95% of adherence is required for optimal viral load suppression[4]. Poor adherence may lead to the emergence of drug-resistance, disease progression and death.[5]

In India, Karnataka is recognized as one of the six states with high prevalence of HIV.[6] Karwar being a border district between the States of Karnataka and Goa, there is limited information regarding levels of adherence and predictors of suboptimal adherence to treatment among PLHA receiving ART in this region. Addressing the factors affecting the adherence gives an opportunity to improve the level of adherence which in-turn helps to improve the quality of life and life span of the HIV infected individuals.

The study was conducted to measure the level of adherence to Antiretroviral Therapy and the factors influencing the adherence.

MATERIALS AND METHODS

Study design, location & period: This cross-sectional descriptive study was conducted at ART Centre attached to Teaching Hospital of Karwar Institute of Medical Sciences, Karwar where anti-retroviral therapy is provided free of cost. This study was conducted between 1st January 2019 to 30th April 2019.

Study population: People Living with HIV/AIDS (PLHA), who were on first line ART therapy for atleast past 6 months & accessing services at ART Centre attached to Teaching Hospital of Karwar Institute of Medical Sciences, Karwar and aged 18 years & above and who gave written informed consent were included in the study.

Sample size and selection criteria: The sample size was calculated based on expected proportion of adherence to ART among PLHIV based on previous studies[1] using the formula $n=4pq/d^2$ with a relative precision of 15%. Accordingly it was decided to interview 110 patients.

Following formula was used to calculate the adherence[4]

$$\text{Adherence (in \%)} = \frac{\text{Total no. of pills the patient has actually taken}}{\text{Total no. of pills sh'd have taken in that time period}} \times 100$$

More than 95% of adherence is required for optimal viral load suppression. Adherence less than 95% is considered as poor adherence.

Data collection: Consent was obtained from the office of ART centre attached to Karwar Institute of Medical Sciences, Karwar. The participants were informed about the purpose of the study and those who gave written informed consent were interviewed separately in privacy and in a language understandable to the subjects using a semi- structured and pre-tested questionnaire. All the information collected was based on patient self report.

Statistical Analysis: Data collected was entered into excel sheet and analyzed using SPSS ver 18 statistical software. Frequency, percentage and means were used to present the data. Chi square test was used to find association between different factors & adherence to treatment. For all tests p value of < 0.05 was considered for statistical significance.

Ethical Clearance: Ethical clearance was obtained from Institutional Ethical Committee of Karwar Institute of Medical Sciences, Karwar before starting the study.

RESULTS

Table 1 shows the background characteristics of the respondents. Out of 110 respondents interviewed, 54.5% were males & 45.5% were females. More than half of the participants i.e. 54.5% of them were in the age group of 40-59 years. Mean age of the respondents was 43.1 Years. 68.2% of them were residing at rural area. 92.7% were married. 75.5% of them had formal education while 24.5% were never had any formal education. 42.8% of the respondents travelled upto 50 kms to access the ART service while 27.2% travelled more than 100 Kms to access the service.

While assessing the level of adherence to ART drugs, respondents were asked to report the number of pills of ART missed over previous four days, one week, one month and three months. It was observed that 94.5%, 84.5%, 83.6% & 89.1% reported high adherence (> 95%) in previous 4 days, one week, 1 month & 3 months respectively. (Table 2)

Table 1: Background characteristics of the respondents (N=110)

Characteristics	Respondents (%)
Gender	
Male	60 (54.5)
Female	50 (45.5)
Age in years	
<20	1 (0.9)
20-39	40 (36.4)
40-59	60 (54.5)
> 60	9 (8.2)
Place of Residence	
Rural	75 (68.2)
Urban	35 (31.8)
Marital Status	
Un-Married	8 (7.3)
Married	102 (92.7)
Educational Status	
Illiterate	27 (24.5)
Primary	17 (15.5)
Secondary	19 (17.3)
High School	29 (26.4)
Pre-University	15 (13.6)
Degree	3 (2.7)
Distance Travelled for ART	
<10 KM	8 (7.3)
10-50 KM	39 (35.5)
50-100 KM	33 (30.0)
>100 KM	30 (27.2)

Table 2: Distribution of respondents by Level of adherence over different time periods of recall

Time periods of Recall	Adherence		Total
	Low (< 95%) (%)	High (> 95%)(%)	
Previous 4 days	6(5.5)	104(94.5)	110
Previous 7 days	17(15.5)	93(84.5)	110
Previous 1 Month	18(16.4)	92(83.6)	110
Previous 3 Months	12(10.9)	98(89.1)	110

For the analysis of factors associated with adherence, to minimize the recall bias, an adherence level of one week was considered for analysing the factors associated with adherence.

When the factors affecting the adherence to ART was analysed, factors like age, sex, place of residence, marital status & education status of PLHA were not found to be affecting adherence to ART. A statistically significant association was observed between the distance travelled for availing ART services and the adherence with odds ratio 9.919 {95% CI (1.095 – 89.829)}. Among the patients with low adherence, the most common reason for missing the pill were "forgot to take pill" (37.3%) and "could not collect the tablets" followed by reason of "emotional stress"

Table 3: Factors influencing the adherence

Characteristics	Low adherence (<95%) (%)	High adherence (> 95%) (%)	Chi-square test	P value	Odd Ratio	95% CI	p-value
Gender							
Male (Ref)	9 (18)	41 (82)	**0.455**	**0.5**	**1**	**-**	**-**
Female	8 (13.3)	52 (86.7)			0.752	0.205-2.756	0.667
Age in years							
<20	1 (100)	0 (0)	**7.386**	**0.193**	0	-	0.999
20-39	5 (12.5)	35 (87.5)			1.907	0.5-7.268	0.345
40-59 (Ref)	10 (16.7)	50 (83.3)			1	-	-
> 60	1 (11.1)	8 (88.9)			1.543	0.134-17.775	0.728
Place of Residence							
Rural	12 (16)	63 (84)	**0.054**	**0.817**	0.808	0.158-4.137	0.798
Urban (Ref)	5 (14.3)	30 (85.7)			1	-	-
Marital Status							
Un-married	1 (12.5)	7 (87.5)	**0.058**	**0.81**	0	-	0.999
Married (Ref)	16 (15.7)	86 (84.3)			1	-	-
Educational Status							
Illiterate	6 (22.2)	21 (77.8)	**2.631**	**0.757**	0	-	0.999
Primary	2 (11.8)	15 (88.2)			0	-	0.999
Secondary	3 (15.8)	16 (84.2)			0	-	0.999
High School	5 (17.2)	24 (82.8)			0	-	0.999
Pre-University	1 (6.7)	14 (93.3)			0	-	0.999
Degree (Ref)	0 (0)	3 (100)			1	-	-
Distance Travelled for ART							
<10 Km	1 (12.5)	7 (87.5)	**9.202**	**0.027***	2.079	0.167-25.825	0.569
10-50 Km	5 (12.8)	34 (87.2)			1.977	0.507-7.711	0.327
50-100 Km (Ref)	10 (30.3)	23 (69.7)			1	-	-
>100 Km	1 (3.3)	29 (96.7)			**9.919**	1.095-89.829	**0.041***
Time since start of ART							
1-5 Years	8 (18.6)	35 (81.4)	**0.943**	**0.624**	0.593	0.151-2.331	0.454
6-10 years (Ref)	8 (14.8)	46 (85.2)			1	-	-
>10 years	1 (7.7)	12 (92.3)			1.559	0.147-16.53	0.713

* Statistically significant

DISCUSSION

In our study, among the 110 patients who were on first line anti retroviral therapy for atleast past 6 months, an adherence level of > 95% was observed among 94.5%, 84.5%, 83.6% & 89.1% of respondents in previous four days, one week, one month & three months respectively. Our study reported a higher level of adherence when compared to study done by Kumar A et al which reported >95% adherence level of 84%, 79%, 83% and 90% among patients over the previous four days, one week, one month and three months respectively.[7] In a study conducted by Achappa B et al & Shah B et al an adherence level of > 95% was reported among 63.7% & 73.5% of patients respectively based on a 4 day recall.[1,8] While a study conducted by Cauldbeck MB et al reported 100% adherence among 81% & 70% of respondents in the last one week & last one month respectively.[9] A higher proportion of adherence (98.6% over past one month) was reported in a study conducted by Biswas A et al.[10] varied range of observations were made in studies conducted by Sarna et al , Bijal shaw et al, Safren SA et al, Lal V et al and Sinha S et al.[11,12,13,14,15]

When the factors affecting the adherence to ART was analysed, a statistically significant association was observed between the distance travelled for availing ART services and the adherence with odds ratio 9.919 {95% CI (1.095 – 89.829)}. In a study conducted by Shah B et al, adherence was positively associated with age, presence of comorbid conditions, medication self-efficacy, absence of

pain in the past month, and support from family and friends.[8] In a study conducted by Cauldbeck MB et al, a greater medication adherence was seen in those who were older, male gender, from larger families, having a previous AIDS defining illness and taking less tablets in a day.[9] while Wanchu et al reported financial constraints, forgetting to take the medication, drug toxicity, lack of access to drug, fear of getting immune to the benefit of the drug as the main reasons for non-adherence.[16] Mhaskar et al reported cost of medication as the most common obstacle to adherence.[17] Semvua SK et al reported that non-adherence to ART was associated with younger age and unemployment.[18]

Among the patients with low adherence, the most common reason for missing the pill were "forgot to take pill" (37.3%) and "could not collect the tablets" followed by reason of "emotional stress" which is similar to the observation reported by Achappa B et al.[1] Shah B et al reported reasons of "ran out of pills", "travelling away from home" & "felt sick or ill" as the common reasons for missing the pills.[8]

CONCLUSION

A good level of adherence was observed among the respondents. It can be further improved by counseling and additional support. Distance travelled was the significant barrier in accessing the services. This can be overcome by making the services decentralized and also by addressing the stigma so that they can utilize the available nearby service centres.

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