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Retraction

The article "Evaluation of factors influencing drug adherence to anti retroviral therapy (ART) in a tertiary care hospital, Guntur Andhra Pradesh, India" is retracted by the Editor and Publisher, as per the request of corresponding author Dr. Bheemesh Naidu Mattam and co-authors, due to an unintended mistake. The Moriskys Medication Adherence Scale (MMAS-8) was used without proper permission.

REFERENCE:

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Original Research Article

Evaluation of factors influencing drug adherence to anti retroviral therapy (ART) in a tertiary care hospital, Guntur Andhra Pradesh, India

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ABSTRACT

Background: Antiretroviral therapy (ART) adherence is a primary determinant of the effectiveness of Human immunodeficiency virus/Acquired immune deficiency syndrome (HIV/AIDS) treatment and is also considered a major predictor of survival among patients living with HIV/AIDS. The present study measures the level of adherence to antiretroviral drug therapy in Guntur district using Morisky medication adherence scale-8 (MMAS-8) and various factors influencing the degree of adherence.
Methods: This was a cross sectional, semi structured questionnaire based study conducted over a period of 13 months at KMCH. MMAS-8 was used to assess the degree of adherence. A semi-structured questionnaire was designed to assess the factors influencing adherence.
Results: A total of 354 patients participated in the study. 126 (36%) patients were highly adherent, 126 (36%) patients were moderately adherent and 102 (29%) patients were low adherent according to MMAS-8 score. Statistical analysis has shown that patients using the reminder tools, patients living with family had shown significant adherence to ART (p value <0.001).
Conclusions: People who are taking ART in Guntur district are found to be moderate to high adherent according to MMAS-8. Degree of adherence to ART is found to be influenced by simplified treatment regimen, patient counselling and family support.

Keywords: Antiretroviral therapy, Drug adherence, Morisky medication adherence scale-8

INTRODUCTION

India has the third highest number of Human immunodeficiency virus (HIV) infected people living in the world.[1] Guntur district ranks second among high risk districts in India.[2,3]

Antiretroviral therapy (ART) plays an important role in improving the prognosis and quality of life of Human immunodeficiency virus/Acquired immuno deficiency syndrome (HIV/AIDS) patients, and in reducing the rate of disease progression and death.[4,5] ART adherence is a primary determinant of the effectiveness of this treatment and is also considered a major predictor of survival among patients living with HIV/AIDS.[6] The definition of adherence used by the World Health Organization (WHO) is "the extent to which a person's behaviour-taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider.[7] Adherence is the ability to take prescribed drugs in the recommended dosages and schedules and following any special instructions e.g. empty stomach, after meals etc.[8] Medication adherence is a major challenge in treating chronic ailments. Non-adherence to anti-retroviral therapy is about 50-70% in western countries.[9] Studies are needed to measure the degree of adherence and to evaluate the various factors influencing the degree of adherence. The present study measures the level of adherence to antiretroviral drug therapy using Morisky 8-Item medication adherence scores (MMAS-8) and evaluates various factors influencing drug adherence using a predesigned semi structured questionnaire.[10]

METHODS

This was a cross sectional, semi structured questionnaire based study. Study was conducted from December 2015 to December 2016. Institutional ethical committee clearance was obtained prior to starting of the study. All HIV patients using antiretroviral therapy for more than 3 months and attending the OP in KMCH were included in the study after taking the informed consent. Patients who were not willing to give the consent were excluded from the study. Eligible patients were interviewed for 15-20 min, required data was collected and they were counselled according to their problems.

MMAS-8 was used to calculate drug adherence. The self-reported measure of medication taking was developed from a previously validated Four-item scale and supplemented with additional items addressing the circumstances surrounding adherence behaviour.[11] The theory underlying this measure was that failure to adhere to a medication regimen could occur due to several factors such as problems in remembering to take the medication, forgetting to take medication, and problems with the complexity of the medical regimen such as, feeling hassled about sticking to the treatment plan. The questions are phrased to avoid the yes saying bias by reversing the wording of the questions about the way patients might experience failure in following their medication regimen since there is a tendency for patients to give their physicians or other health care provider's positive answers. Each item is measuring a specific medication-taking behaviour and not a determinant of adherence behaviour. Response categories are yes/no for each item with a dichotomous response and a 5-point Likert response for the last item. The items are summed to give a final score. Degree of Adherence is graded as high, medium, and low depending on scores.[12] To evaluate the factors influencing degree of adherence a semi structured questionnaire was designed, taking patient awareness, socio-demographic data in to consideration. The information collected from patients were sorted, coded, and entered in a data sheet and final results were statistically analyzed using 2*3 chi-square contingency test.

RESULTS

Study profile

A total of 354 patients participated in the study of which 258 (73.5%) were females and 96 (27%) were males. 54% patients were of age less than 40 years. 336 (95%) were married and 18 (5%) were unmarried. 156 (40%) were literates and 198 (60%) were illiterates. 102 (29%) patients were low adherence, 126 (36%) patients were moderately adherent and 126 (36%) patients were highly adherent according MMAS-8 score. 46% patients are using the regimen zidovudine+lamivudine+nevirapine. 41% patients are using stavudine+lamivudine+ nevirapine, show in (Table 1 and Table 2).

Table 1: Characteristics of the patients enrolled in the study.

Patient characteristics	No. of patients (n= 354)
Gender	
Male	258 (73.5%)
Female	96 (27%)
Marital status	
Married	336 (95%)
Unmarried	18 (5%)
Literacy	
Literates	156 (36%)
Illiterates	198 (60%)
Regimens being used	
Zidovudine + Lamivudine + Nevirapine	163 (46%)
Stavudine + lamivudine + nevirapine	145 (41%)

Table 2: Responses to Morisky medication adherence scale-8.

MMAS-8 items	No. of patients	%
Do you sometimes forget to take your medicine?		
Yes	126	36
No	228	64
People sometimes miss taking their medicine for reasons other than forgetting. Over the past 2 weeks, were there any days when you did not take your medicines?		
Yes	90	25
No	264	75
Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?		
Yes	84	24
No	270	76
When you travel or leave home, do you sometimes forget to bring your medicine?		
Yes	132	37
No	222	63
Did you take all your medicines yesterday?		
Yes	318	90
No	36	10
When you feel like the symptoms are under control, do you sometimes stop taking your medicine?		
Yes	66	19
No	288	81
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?		
Yes	78	22
No	276	78
How often do you have difficulty remembering to take all your medicine?		
A. Never/ rarely	228	64
B-E	126	36
Overall score	126	
=8	126	
<6	102	

Table 3: Factors influencing degree of adherence.

Factors	Low	Medium	High	Total	Chi-square	p value
Gender						
Male	30	36	30	96 (27%)		
Female	72	90	96	258 (73%)		
Total	102 (29%)	126 (36%)	126 (36%)	354	1.104	0.5757
Age						
<40 years	54	78	60	192 (54%)		
>40 years	66	48	42	156 (44%)		
Marital status						
Married	90	120	126	336 (95%)	16.208	0.00030233
Unmarried	12	6	0	18 (5%)		
Literacy						
Literate	42	54	60	156 (40%)	1.066	0.5868
Illiterate	60	72	66	198 (60%)		
Employment status						
Employed	72	60	66	198 (60%)	13.066	0.00145464
Unemployed	30	66	60	156 (40%)		
Family status						
With family	72	108	114	294 (83%)	16.825	0.00022207
Without family	30	18	12	60 (17%)		
Alcohol addiction						
Yes	12	12	12	36 (10%)	0.399	0.81914022
No	90	114	114	318 (90%)		
Travel time						
<30 mins	30	48	72	150 (42%)		
>30mins	96	78	30	204 (58%)		
Other treatment methods						
Followed	18	120	30	168 (47%)		
Not followed	84	6	96	186 (53%)		
Use of reminders						
Yes	18	36	96	150 (45%)	94.379	0
No	84	90	30	204 (55%)		
Complex dosing schedule						
Yes	0	6	0	6 (2%)	11.044	0.00399784
No	102	120	126	348 (98%)		
Forgetfulness						
Yes	78	36	12	126 (36%)	114.411	0
No	24	90	114	228 (64%)		
Fear of adverse effects						
Yes	54	72	18	144 (41%)	56.82	0
No	48	54	108	210 (59%)		
Experienced adverse effects						
Yes	78	90	78	246 (70%)	5.987	0.05011174
No	24	36	48	108 (30%)		
Trust on treatment regimen						
No	18	6	12	36 (10%)	10.334	0.00570165
Yes	84	120	114	318 (90%)		

Various factors influencing drug adherence shown in (Table 3)

Role of reminders

Among the patients who are using reminders, 64% were highly adherent and 24% were moderately adherent and 12% were low adherent to ART. Patients who are not using reminders showed poorer degree of adherence: 4%-high adherence, 44%-medium adherence and 41%-low

adherence. Use of reminders increased the degree of adherence significantly (p-value <0.001).

Role of living with family

Among 294 patients who are living with family, 45% were highly adherent and 42% were moderately adherent and 28% were low adherent.

Whereas patients who are not living with family showed 20%, 30%, and 50% high, moderate and low adherence respectively. patients living with family showed significant adherence to ART (p-value <0.001).

Role of adverse drug reactions

70% of patients experienced adverse drug reactions. 59% patients accepted the drug outcomes. 90% of patients expressed trust on treatment regimen.

Because of the trust treatment methods, even though 70% of the patients experienced the adverse drug reactions, it is not significantly influencing the degree of adherence (p value >0.001)

Others

CD4 count

88% patients had CD4 count >200cells/mm$^{3.}$

DISCUSSION

The advent of newer antiretrovirals, treatment has moved from monotherapy and bi-therapy to triple drug therapy or Highly Active Antiretroviral Therapy (HAART) which consists of three or more antiretroviral medicines to be taken in combination.[13]

In order to achieve the goal of antiretroviral therapy of undetectable levels of the virus in the blood, patients are required to maintain more than 90-95 % adherence.[13] Adherence to the HAART regimen appears to be the single most important variable that predicts a patient's ability to achieve and maintain good health. In this study, based on morisky scale results, Large percentage of people in Guntur district are found to be coming under moderate to high adherent groups, may be due to better counselling methods being followed in ART centre.

Gender, literacy and alcoholism are not significantly affecting the degree of adherence. Similar results were found in Jose A et al, which states Socioeconomic status, age, gender, place of residence, distance travelled to ART centre, duration of treatment etc. had no effect on adherence.[13]

According to the present study patients living with family showed significant adherence. Similar results were found by Carrieri et al., Living alone and a lack of support have been associated with non-adherence to ART and Eraker, et al., patients not living alone, having a partner, social or family support, peer interactions and better relationships are characteristics of adherent patients.[15,16]

In this study patients using reminders were more adherent than patients not using reminders. According to Gokarn A et al., study patients who were using alarm watches/alarms on their mobile phones to remind themselves were more adherent.[18]

Exposure to adverse drug reactions is not significantly limiting (p value >0.001) adherence because 90% of patients expressed trust on treatment regimen, may be due to better counselling facilities in ART centres.

According to Falagas et al., Socioeconomic status (SES) as a determinant of adherence to treatment of HIV infected patients: a systematic review of the literature- the level of adherence in the HIV population is higher than in most other chronic diseases.[18] An in-depth understanding of patients' health seeking behaviour and health care delivery system may be useful in improving ART adherence and retention of patients in care continuum and program.[19]

CONCLUSION

Illiteracy and gender are not influencing degree of adherence because of simplified treatment regimen, reminders and counselling. Counselling is needed to be extended to patient's family members to increase drug adherence. Effective feedback system is needed to be built to improve adherence. Further research is needed to validate this measurement scale (MMAS-8) in other settings and with other health problems.

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