Analysis of compliance to antiretroviral treatment among patients with HIV/AIDS

Análise da adesão ao tratamento com antirretrovirais em pacientes com HIV/AIDS

Análisis de la adhesión al tratamiento con antirretrovirales en pacientes con VIH/SIDA

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ABSTRACT

Objective: To analyze the compliance to antiretroviral therapy among HIV/AIDS patients. **Method**: 99 HIV-positive volunteers undergoing treatment responded to a semi-structured sociodemographic interview and to a questionnaire that assessed compliance to antiretroviral treatment. **Results**: In the sample analyzed, 52.5% of the volunteers presented good/adequate treatment compliance, while 33.3% presented low/insufficient compliance. There was no significant difference between men and women in the questionnaire score, nor between groups with different levels of education. **Conclusion**: The main items of the questionnaire that contributed to good/adequate compliance were: positive impact of treatment on health and quality of life, few side effects after initiation of therapy, and positive self-evaluation of participants regarding their compliance to antiretroviral therapy. The main barriers detected for compliance to antiretroviral therapy were the lack of knowledge about current medications and the lack of information on antiretroviral therapy drugs.
Descriptors: Antiretroviral Therapy, Highly Active; Immunity; Medication Adherence; HIV Infections; Acquired Immunodeficiency Syndrome.

RESUMO

Objetivo: Analisar a adesão de pacientes com HIV/AIDS à terapia antirretroviral. **Método**: 99 voluntários portadores do vírus HIV sob tratamento foram submetidos à entrevista social e demográfica semiestruturada e ao questionário para avaliação da adesão ao tratamento antirretroviral. **Resultados**: Na amostra analisada, 52,5% dos voluntários apresentaram boa/adequada adesão ao tratamento, enquanto 33,3% apresentaram baixa/insuficiente. Não houve diferença significativa entre homens e mulheres na pontuação do questionário, nem entre os diferentes graus de instrução. **Conclusão:** Os principais itens do questionário que contribuíram para aderência boa/adequada foram o impacto positivo do tratamento na saúde e na qualidade de vida, os poucos efeitos colaterais com o início da terapia e a autoavaliação positiva dos participantes quanto à própria adesão à terapia antirretroviral. As principais barreiras detectadas para a baixa/insuficiente adesão à terapia antirretroviral foram o desconhecimento sobre as medicações em uso e o relato de escassez de informação sobre os medicamentos da terapia antirretroviral.
Descritores: Terapia Antirretroviral de Alta Atividade; Imunidade; Adesão à Medicação; HIV; Síndrome de Imunodeficiência Adquirida.

RESUMEN

Objetivo: analizar la adhesión de pacientes con VIH/SIDA a la terapia antirretroviral. **Método**: 99 voluntarios portadores del virus VIH en tratamiento se sometieron a entrevista social y demográfica semiestructurada y al cuestionario de evaluación de la adhesión al tratamiento antirretroviral. **Resultados**: en la muestra analizada, el 52,5% de los voluntarios presentaba buena/adecuada adhesión al tratamiento, mientras que el 33,3%, baja/insuficiente. No había diferencia significativa entre hombres y mujeres en la puntuación del cuestionario, ni entre los diferentes grados de instrucción. **Conclusión**: Los puntos principales del cuestionario que contribuyeron a la adherencia buena/adecuada fueron: impacto positivo del tratamiento de la salud y la calidad de vida, pocos efectos colaterales al principio de la terapia y una autoevaluación positiva de los participantes relativa a la propia adhesión a la terapia antirretroviral. Las principales barreras detectadas para la baja/insuficiente adhesión a la terapia antirretroviral fueron el desconocimiento sobre los remedios en uso y la escasez de información sobre los medicamentos de la terapia antirretroviral.
Descriptores: Terapia Antirretroviral de Alta Actividad; Inmunidad; Adhesión a la Medicación; VIH; Síndrome de Inmunodeficiencia Adquirido.

INTRODUCTION

Treatment compliance is the acceptance and assimilation of a prescribed therapeutic regimen in the daily life of people undergoing treatment, with the crucial participation of the patients in the decisions concerning themselves[1]. This is a very important topic in HIV therapy, since patient and physician establish an alliance and the treatment is followed and understood. Therefore, treatment compliance will consider patients' compliance with medical prescriptions regarding dosage, number of medications per hour, duration of treatment and special recommendations for specific medications[2-3].

The human immunodeficiency virus (HIV) is a retrovirus associated with the progressive immunodeficiency of the person infected and loss of CD4+ T lymphocytes and specific globules. This compromises the ability of the immune system to defend the body, characterizing the disease as chronic and potentially lethal[4]. A weakened immune system due to low leukocyte count and severe lymphopenia makes the patient vulnerable to opportunistic diseases, infections and mutations in the processes of cell division, leading to conditions, such as lymphomas. Thus, increased morbidity and mortality are associated with the consequences of immunodeficiency[5].

HIV is considered a worldwide epidemic with several associated risk factors, such as age, gender, ethnicity, sexual orientation and average income. In Brazil, 136,945 cases of HIV infection were reported from 2007 to June 2016 in the Ministry of Health system[6]. However, it is believed that a relevant number of individuals infected by the virus were not identified and, therefore, not reported for the regulatory bodies.

In the 1990s, in order to reduce the effects caused by immunosuppression, antiretroviral therapy (ART) was incorporated into HIV treatment, which caused an increase in the quality of life and in the life span of the patients. Currently, ART is composed of three antiviral drugs with different mechanisms of action, considering rational use, efficacy, effectiveness, toxicity and dosage[7]. However, ART can cause a series of metabolic disorders, which reduce treatment compliance[8].

Among the adverse effects reported by patients undergoing ART or identified by health professionals are: rash, nausea, diarrhea, kidney failure, osteopenia, central nervous system adverse events, hepatotoxicity, lipoatrophy, hypertriglyceridemia, dyslipidemia and insulin resistance[9].

Patient compliance to ART must be clinically and scientifically monitored. Clinical monitoring identifies users who do not adhere to treatment and scientific monitoring identifies the prevalence of noncompliance through statistical analysis[10]. In this sense, noncompliance to treatment is multicausal, as it may be related to the patient's own understanding, to the side effects of therapy, to the information provided by health units or to the inefficiency of the social support service[2-3].

OBJECTIVE

To analyze the compliance to antiretroviral therapy among HIV/AIDS patients.

METHOD

Ethical aspects

The research followed Resolution no. 466/2012 on Guidelines and Norms for Research Involving Human beings.

The research project was submitted and approved by the Research Ethics Committee.

The Informed Consent Form (ICF) that was read highlighted the voluntary participation in the research and the right to withdraw at any time and clarified that only the data obtained with scientific intention would be used, protecting the privacy of the volunteer.

Design, setting and period

The subjects selected to participate were referred to a pre-determined space in the CSB no. 11 and in the Joint Health Unit of the South Wing, a calm environment where the participants signed the ICF and then began to respond to the interview and to the instrument.

The sites selected for the application of the research were two basic health units (BHU) with multi-professional teams: the Brasília Health Center no. 11 and the Joint Health Unit of the South Wing (Day Hospital). Both institutions follow the Ministry of Health's guidelines of the Program on Sexually Transmitted Infections, HIV/AIDS and Viral Hepatitis.

Data was collected from April to May 2016.

Population; inclusion and exclusion criteria

The participants of the study were patients on antiretroviral treatment and HIV/AIDS followed-up in the health units selected for the study.

The inclusion criteria were: being at least 18 years old; positive serology for HIV; being on uninterrupted and regular antiretroviral therapy for at least six months; being followed up in clinical appointments scheduled during the period of the research; having already been to at least two clinical appointments; being able to understand and collaborate by answering the questions. Individuals with psychiatric disorders, pregnant women and patients with communication disabilities that prevented them from responding to the interview and to the questionnaire were excluded from the study.

The convenience sample consisted of 99 patients, and the majority (n = 70) came from the Brasilia Health Center no. 11, only due to their willingness to participate in the study.

Study Protocol

The sociodemographic interview was carried out by the researcher in the health unit, in a private space. Information from the last 30 days of therapy was collected. The interview covered social, demographic and economic characteristics (age, gender, civil status, employment situation, level of education, per capita income, acquisition of medicines and sexual orientation).

In addition, clinical characteristics of each interviewee were assessed: HIV mode of transmission, use of psychiatric medication and other medications, social support network, comorbidities, time of infection and duration of antiretroviral therapy, number of CD4 +

cells per/mm³, viral load, current antiretroviral medication, number of pills, dosage, place of residence, alcohol use in the last month, interval and time elapsed between the consultations in the referral center.

The semi-structured interview had four subjective questions: "How did you feel when you received the diagnosis?"; "What is the influence of receiving ART in your life?"; "How do you feel when you take the medication?"; "What do you do in your leisure time?".

The *Cuestionario para La Evaluación de La Adhesión al Tratamiento Antiretroviral* CEAT-VIH online (questionnaire to evaluate compliance to antiretroviral treatment – CEAT-VIH) was used in its Brazilian adapted and validated by the center specialized in the care of patients infected by HIV/AIDS of Porto Alegre, Rio Grande do Sul, where the results presented good reliability, high sensitivity and medium specificity[11].

Participants were invited to participate in the study while waiting for their medical consultation. After acceptance, each participant was sent to an office in the same place, where, after hearing the objectives of the research and reading and signing the ICF, they responded to the questionnaires. If the participant had difficulty reading the questionnaire, it could be presented verbally by the interviewer, without influencing the interviewee.

Analysis of results

The information obtained in the questionnaire was reviewed and inserted in a spreadsheet.

Compliance was analyzed using the CEAT-HIV questionnaire and its classification in three groups: low/insufficient compliance (score ≤74, percentile ≤ 49), good/adequate compliance (score between 75 and 79, percentile 50-85) and strict compliance (score ≥ 80; percentile ≥ 85). The total CEAT-VIH score is the sum of the 20 items according to the coding assigned to each of the items. These scores allow identifying a global rate of compliance to the antiretroviral treatment, facilitating the classification of compliance. The higher the score obtained, the greater the degree of compliance to treatment. The minimum score possible was 17 and the maximum score 89[11]. Continuous data from the questionnaire were also used to test hypothesis with social and demographic variables.

The data were expressed in the results and in the tables with mean ± standard deviation. The data presentation used descriptive statistics. The Kolmogorov-Smirnov test was used to verify the normality of the data. The relationship between treatment compliance and treatment time was analyzed by the Spearman Correlation test. Possible differences in treatment compliance according to gender were analyzed by the Mann-Whitney U test. The relationship between treatment compliance and different levels of education was analyzed by the Kruskal-Wallis test. When there were significant associations, the differences between groups were analyzed by the Mann-Whitney U test. All analyzes were performed in the statistical software SPSS version 21.0. The level of significance was set at p<0.05.

RESULTS

A total of 99 volunteers (89 men and 10 women) participated in the study. Regarding level of education, 39 had only completed primary education, 27 had completed secondary education and 33 had a higher education degree. The treatment time reported was of 7.55 ± 5.97 years.

Treatment compliance was classified according to the CEAT-HIV score as low/inadequate (below 52 points), good/adequate (53 to 78 points) and strict (above 79 points). In the sample analyzed, 74 volunteers showed good compliance to the treatment, while 25 volunteers had a strict compliance to treatment, according to the responses obtained in the questionnaire (Table 1).

There was no significant association between treatment compliance and treatment time (p = 0.877; OR = 0.160). There was no significant difference in level of education (p = 0.899) and treatment time (p = 0.672) between the groups that presented good/adequate and strict compliance. There was also no significant difference in the questionnaire score between males and females (M:75.26 ± 5.53 vs. F: 76.30 ± 2.54; p = 0,944). There was no difference in the compliance scores between patients with different levels of education (Elementary education: 76.51 ± 4.03 vs. Secondary education 72.78 ± 7.15 vs. Higher education: 76.12 ± 4.21; p = 0.066).

The associations between the treatment compliance categories (dependent variable), the answers of the questionnaires regarding personal characteristics and the CEAT-VIH (independent variable) were analyzed for their statistical significance. There were no significant associations (p < 0.05) between the frequencies according to the treatment compliance classification in 14 of the 20 categories.

However, significant associations were found in the following items: "Do you remember what pills you are currently taking?" (p = 0.025), "How much do you think you know about the medication you take for HIV?" (p = 0.001), "How much do you believe your health has improved since you began HIV treatment?" (p = 0.006), "How do you generally feel about the treatment, since you started taking pills?" (p = 0.035), "How do you assess the severity of the side effects of the HIV treatment?" (p = 0.000) and "How well do you feel you manage taking pills?" (p = 0.010).

Table 1 - Questionnaire responses for the assessment of compliance to antiretroviral treatment

Variable	Total participants (N = 99)	
	Frequency	Percentage
Have you ever skipped taking pills?		
Always	2	2.0
More than half the time	6	6.1
Approximately half the time	1	1.0
At least once	47	47.5
Never	43	43.4
Have you ever skipped taking pills on account of feeling physically better?		
Always	2	2.0
More than half the time	0	0.0
Approximately half the time	1	1.0
At least once	11	11.1
Never	85	85.9
Have you ever skipped taking pills on account of feeling physically worse after the pills?		
Always	2	2.0
More than half the time	0	0.0
Approximately half the time	1	1.0
At least once	9	9.1
Never	87	87.9

To be continued

Table 1 (concluded)

Variable	Total participants (N = 99)	
	Frequency	Percentage
Have you ever skipped taking pills on account of feeling sad or depressed?		
Always	1	1.0
More than half the time	0	0.0
Approximately half the time	0	0.0
At least once	3	3.0
Never	95	96.0
Do you remember what pills you are currently taking?		
No	48	48.5
Yes	51	51.5
How would you rate your relationship with your doctor?		
Very bad	0	0.0
Somewhat bad	1	1.0
Regular	3	3.0
Could improve	8	8.1
Good	87	87.9
How hard do you try to keep up with treatment?		
Not at all	1	1.0
A little	0	0.0
Somewhat	4	4.0
Quite	26	26.3
Very	68	68.7
How much do you think you know about the medication you take for HIV?		
Nothing	15	15.2
A little bit	16	16.2
Some things	19	19.2
Quite a bit	17	17.2
A lot	32	32.3
How much do you think taking pills helps you?		
Not at all	3	3.0
A little	2	2.0
Somewhat	3	3.0
Quite a lot	18	18.2
Very much	73	73.7
How much do you believe your health has improved since you began HIV treatment?		
Not at all	4	4.0
A little	0	0.0
Somewhat	8	8.1
Quite a lot	16	16.2
Very much	71	71.7
To what extent do you think you are able to proceed with treatment?		
Not at all	0	0.0
A little	0	0.0
Somewhat	3	3.0
Quite	9	9.1
Very	87	87.9
Do you usually take your pills at the correct time?		
No, never	1	1.0
Yes, sometimes	5	5.1
Yes, approximately half the time	6	6.1
Yes, many times	15	15.2
Yes, always	72	72.7
When the results of the tests are good, does your doctor use them to give you motivation to follow the treatment?		
No, never	4	4.0
Yes, sometimes	4	4.0

Variable	Total participants (N = 99)	
	Frequency	Percentage
Yes, approximately half the time	1	1.0
Yes, many times	11	11.1
Yes, always	79	79.8
How do you generally feel about the treatment, since you started taking pills?		
Very dissatisfied	0	0.0
Dissatisfied	4	4.0
Neutral	6	6.1
Satisfied	35	35.4
Very satisfied	54	54.5
How do you assess the severity of the side effects of the HIV treatment?		
Very severe	13	13.1
Severe	3	3.0
Moderately severe	12	12.1
A little severe	20	20.2
Not severe	51	51.5
How much time do you think you lose to manage taking pills?		
A lot of time	1	1.0
Quite a lot time	1	1.0
Some time	1	1.0
A little time	10	10.1
No time at all	86	86.9
How well do you feel you manage taking pills?		
I'm not compliant	0	0.0
I'm a little compliant	2	2.0
I'm compliant	5	5.1
I'm very compliant	17	17.2
I'm totally compliant	75	75.8
How difficult it is for you to take pills?		
Very difficult	1	1.0
Really difficult	1	1.0
Neutral	0	0.0
Easy	10	10.1
Very easy	87	87.9
Since you are being treated, have you ever stopped taking your medication one full day, or more than one?		
0	33	33.3
1	19	19.2
2	7	7.1
3	5	5.1
5	4	4.0
7	5	5.1
11	1	1.0
14	1	1.0
15	1	1.0
24	1	1.0
30	4	4.0
45	1	1.0
60	3	3.0
72	1	1.0
90	1	1.0
120	4	4.0
180	2	2.0
365	3	3.0
730	2	2.0
1095	1	1.0
Do you have specific strategies to remember taking pills?		
No	66	66.7
Yes	33	33.3

Table 2 - Distribution of questionnaire responses to assess the return to antiretroviral treatment according to the categorization of the compliance score

Variable	Total N = 99		Low/insufficient n = 33		Good/adequate n = 52		Strict n = 14		p^a
	F	%	F	%	F	%	F	%	
Have you ever skipped taking pills?									0.098
Always	2	2.0	2	6.0	0	0.0	0	0.0	
More than half the time	6	6.0	4	12.1	2	3.8	0	0.0	
Approximately half the time	1	1.0	1	3.0	0	0.0	0	0.0	
At least once	47	47.4	17	51.5	25	48.0	5	35.7	
Never	43	43.4	9	27.2	25	48.0	9	64.2	
Have you ever skipped taking pills on account of feeling physically better?									0.114
Always	2	2.0	2	6.0	0	0.0	0	0.0	
More than half the time	0	0.0	0	0.0	0	0.0	0	0.0	
Approximately half the time	1	1.0	1	3.0	0	0.0	0	0.0	
At least once	11	11.1	6	18.1	5	9.6	0	0.0	
Never	85	85.8	24	72.7	47	90.3	14	100.0	
Have you ever skipped taking pills on account of feeling physically worse after the pills?									0.057
Always	2	2.0	2	6.0	0	0.0	0	0.0	
More than half the time	0	0.0	0	0.0	0	0.0	0	0.0	
Approximately half the time	1	1.0	1	3.0	0	0.0	0	0.0	
At least once	9	9.0	6	18.1	3	5.7	0	0.0	
Never	87	87.8	24	72.7	49	94.2	14	100.0	
Have you ever skipped taking pills on account of feeling sad or depressed?									0.438
Always	1	1.0	1	3.0	0	0.0	0	0.0	
More than half the time	0	0.0	0	0.0	0	0.0	0	0.0	
Approximately half the time	0	0.0	0	0.0	0	0.0	0	0.0	
At least once	3	3.0	2	6.0	1	1.9	0	0.0	
Never	95	95.9	30	90.9	51	98.0	14	100.0	
Do you remember what pills you are currently taking?									0.025
No	48	48.4	22	66.6	22	42.3	4	28.5	
Yes	51	51.5	11	33.3	30	57.6	10	71.4	
How would you rate your relationship with your doctor?									0.502
Very bad	0	0.0	0	0.0	0	0.0	0	0.0	
Somewhat bad	1	1.0	1	3.0	0	0.0	0	0.0	
Regular	3	3.0	2	6.0	1	1.9	0	0.0	
Could improve	8	8.0	3	9.0	5	9.6	0	0.0	
Good	87	87.8	27	81.8	46	88.4	14	100.0	
How hard do you try to keep up with treatment?									0.086
Not at all	1	1.0	1	3.0	0	0.0	0	0	
A little	0	0.0	0	0.0	0	0.0	0	0.0	
Somewhat	4	4.0	4	12.1	0	0.0	0	0.0	
Quite	26	26.2	9	27.2	14	26.9	3	21.4	
Very	68	68.6	19	57.5	38	73.0	11	78.5	
How much do you think you know about the medication you take for HIV?									0.001
Nothing	15	15.1	9	27.2	6	11.5	0	0	
A little bit	16	16.1	8	24.2	8	15.3	0	0.0	
Some things	19	19.1	6	18.1	13	25.0	0	0.0	
Quite a bit	17	17.1	2	6.0	12	23.0	3	21.4	
A lot	32	32.3	8	24.2	13	25.0	11	78.5	
How much do you think taking pills helps you?									0.068
Not at all	3	3.0	3	9.0	0	0.0	0	0.0	
A little	2	2.0	2	6.0	0	0.0	0	0.0	
Somewhat	3	3.0	2	6.0	1	1.9	0	0.0	
Quite a lot	18	18.1	5	15.1	12	23.0	1	7.1	
Very much	73	73.7	21	63.6	39	75.0	13	92.8	
How much do you believe your health has improved since you began HIV treatment?									0.006
Not at all	4	4.0	4	12.1	0	0.0	0	0.0	
A little	0	0.0	0	0.0	0	0.0	0	0.0	
Somewhat	8	8.0	5	15.1	3	5.7	0	0.0	
Quite a lot	16	16.1	7	21.2	9	17.3	0	0.0	
Very much	71	71.7	17	51.5	40	76.9	14	100.0	

Table 2 (concluded)

Variable	Total N = 99		Low/insufficient n = 33		Good/adequate n = 52		Strict n = 14		p[a]
	F	%	F	%	F	%	F	%	
To what extent do you think you are able to proceed with treatment?									0.473
Not at all	0	0.0	0	0.0	0	0.0	0	0.0	
A little	0	0.0	0	0.0	0	0.0	0	0.0	
Somewhat	3	3.0	2	6.0	1	1.9	0	0.0	
Quite a lot	9	9.0	3	9.0	6	11.5	0	0.0	
Very much	87	87.8	28	84.8	45	86.5	14	100.0	
Do you usually take your pills at the correct time?									0.093
No, never	1	1.0	1	3.0	0	0.0	0	0.0	
Yes, sometimes	5	5.0	4	12.1	1	1.9	0	0.0	
Yes, approximately half the time	6	6.0	4	12.1	2	3.8	0	0.0	
Yes, many times	15	15.1	6	18.1	8	15.3	1	7.1	
Yes, always	72	72.7	18	54.5	41	78.8	13	92.8	
When the results of the tests are good, does your doctor use them to give you motivation to follow the treatment?									0.521
No, never	4	4.0	3	9.0	1	1.9	0	0.0	
Yes, sometimes	4	4.0	2	6.0	2	3.8	0	0.0	
Yes, approximately half the time	1	1.0	1	3.0	0	0.0	0	0.0	
Yes, many times	11	11.1	4	12.1	6	11.5	1	7.1	
Yes, always	79	79.7	23	69.6	43	82.6	13	92.8	
How do you generally feel about the treatment, since you started taking pills?									0.035
Very dissatisfied	0	0.0	0	0.0	0	0.0	0	0.0	
Dissatisfied	4	4.0	2	6.0	2	3.8	0	0.0	
Neutral	6	6.0	4	12.1	2	3.8	0	0.0	
Satisfied	35	35.3	17	51.5	13	25.0	5	35.7	
Very satisfied	54	54.5	10	30.3	35	67.3	9	64.2	
How do you assess the severity of the side effects of the HIV treatment?									0.000
Very severe	13	13.1	12	36.3	1	1.9	0	0.0	
Severe	3	3.0	0	0.0	3	5.7	0	0.0	
Moderately severe	12	12.1	6	18.1	6	11.5	0	0.0	
A little severe	20	20.2	4	12.1	12	23.0	4	28.5	
Not severe	51	51.5	11	33.3	30	57.6	10	71.4	
How much time do you think you lose to manage taking pills?									0.231
A lot of time	1	1.0	1	3.0	0	0.0	0	0.0	
Quite a lot time	1	1.0	0	0.0	0	0.0	1	7.1	
Some time	1	1.0	1	3.0	0	0.0	0	0.0	
A little time	10	10.1	4	12.1	5	9.6	1	7.1	
No time at all	86	86.8	27	81.8	47	90.3	12	85.7	
How well do you feel you manage taking pills?									0.010
I'm not compliant	0	0.0	0	0.0	0	0.0	0	0.0	
I'm a little compliant	2	2.0	2	6.0	0	0.0	0	0.0	
I'm compliant	5	5.0	4	12.1	1	1.9	0	0.0	
I'm very compliant	17	17.1	9	27.2	8	15.3	0	0.0	
I'm totally compliant	75	75.7	18	54.5	43	82.6	14	100.0	
How difficult it is for you to take pills?									0.612
Very difficult	1	1.0	1	3.0	0	0.0	0	0.0	
Really difficult	1	1.0	1	3.0	0	0.0	0	0.0	
Neutral	0	0.0	0	0.0	0	0.0	0	0.0	
Easy	0	10.1	4	12.1	5	9.6	1	7.1	
Very easy	87	87.8	27	81.8	47	90.3	13	92.8	
Since you are being treated, have you ever stopped taking your medication one full day, or more than one?									0.155
0	33	33.3	7	21.2	18	34.6	8	57.1	
1	19	19.1	4	12.1	12	23.0	3	21.4	
2	7	7.0	1	3.0	6	11.5	0	0.0	
3	5	5.0	2	6.0	1	1.9	2	14.2	
5	4	4.0	1	3.0	3	5.7	0	0.0	
7	5	5.0	3	9.0	2	3.8	0	0.0	
11	1	1.0	0	0.0	0	0.0	1	7.1	
14	1	1.0	1	3.0	0	0.0	0	0.0	

To be continued

Table 2 (concluded)

Variable	Total N = 99		Low/insufficient n = 33		Good/adequate n = 52		Strict n = 14		p^a
	F	%	F	%	F	%	F	%	
15	1	1.0	0	0.0	1	1.9	0	0.0	
24	1	1.0	1	3.0	0	0.0	0	0.0	
30	4	4.0	2	6.0	2	3.8	0	0.0	
45	1	1.0	1	3.0	0	0.0	0	0.0	
60	3	3.0	3	9.0	0	0.0	0	0.0	
72	1	1.0	0	0.0	1	1.9	0	0.0	
90	1	1.0	1	3.0	0	0.0	0	0.0	
120	4	4.0	2	6.0	2	3.8	0	0.0	
180	2	2.0	2	6.0	0	0.0	0	0.0	
365	3	3.0	1	3.0	2	3.8	0	0.0	
730	2	2.0	0	0.0	2	3.8	0	0.0	
1095	1	1.0	1	3.0	0	0.0	0	0.0	
Do you have specific strategies to remember taking pills?									0.913
No	66	66.6	22	66.6	34	65.3	10	71.4	
Yes	33	33.3	11	33.3	18	34.6	4	28.5	

DISCUSSION

The main results of the study show a good/adequate treatment compliance (74.7% of the volunteers) and strict compliance (26.2% of the volunteers), which did not seem to change along with level of education, treatment time and gender. The items "Do you remember what pills you are currently taking?"; "How much do you think you know about the medication you take for HIV?"; "How much do you believe your health has improved since you began HIV treatment?"; "How do you generally feel about the treatment, since you started taking pills?"; "How do you assess the severity of the side effects of the HIV treatment?"; and "How well do you feel you manage taking pills?" represent key issues for ART compliance.

Compliance to antiretroviral therapy among HIV patients is extremely important because this treatment can improve quality of life, reduce morbidities and increase survival[3]. However, compliance is one of the greatest challenges of the multi-professional team involved in the treatment, since it can be influenced by factors related to the physical, physiological and psychological changes brought by the disease and by the treatment. In addition, treatment compliance is also influenced by the patients' personalities, their involvement and empathy with the multi-professional health team, and their social interactions[3,12]. In the present study, the relationship between patients and their physicians was evaluated as good by more than 87% of the interviewees, and the involvement with their own treatment – analyzed through questions such as the patient's effort to follow the treatment – was high, which can be interpreted as positive aspects for compliance to ART.

Likewise, treatment compliance seems to be determined by a number of factors such as morbidities, number of pills per day, chronic and infectious conditions, environmental factors, structural and personal factors, educational level and income[13-14]. According to Silva et al.[3], a higher level of education can be related to a better understanding of the pathology and of the drug therapy, contributing to a greater compliance to treatment, which was also observed in the study by Myiada et al.[14]. On the other hand, a low level of education has been related to a change in the profile of the patient, presenting an association not only with treatment compliance but also with virus infection itself[3,15]. However, in the present study there was no statistical difference between groups with different levels of education in their treatment compliance score.

Regarding gender, Auld et al.[16], Lemos et al.[17] e May et al.[18] found a predominance of men in groups with low compliance to treatment, negative prognosis and unsatisfactory clinical results, including their relations with the multi-professional health team. In the work of Betancur et al.[19], there was a significantly higher proportion of women among non-adherent patients. However, in the present study, there was no difference between men and women in compliance to antiretroviral treatment. Ioannides et al.[20] also did not find differences between genders when comparing 154 adolescent males with 134 adolescent females. In this sense, it is possible that environmental, psychological and physical factors are more relevant to treatment compliance than gender.

In addition, compliance to HIV treatment does not appear to vary between adolescents and adults. However, an individualized and multidisciplinary follow-up care must be performed by the health team, which should provide care specifically directed to the target public, with compliance programs composed of psychological interventions that can meet the informational, developmental and fundamental needs of each age group[21].

The antiretroviral therapy can lead to a range of metabolic disorders: despite increasing quality of life and patient survival, ART can be associated with, among other consequences, lipodystrophy, which is a metabolic complication of fat loss, fat gain, or a combination of fat loss and gain[8]. This syndrome can cause fat loss in peripheral regions such as face, buttocks, arms, legs; central fat accumulation in the abdomen, breasts and dorsocervical region; or an association between the two forms described[22]. According to Finkelstein et al.[8] the abnormal fat distribution has a profound negative physical and emotional impact, so it should be considered as an important aspect to be observed in the clinical management of patients undergoing ART.

In addition, compliance to ART is influenced by the presence of co-infections and the amount of drugs required to treat them. According to Lemos et al.[17], patients co-infected with Tuberculosis

(HIV/TB) tend to present lower compliance to treatment, especially low income men, who have three or more clinical conditions and who have a partner who is also infected. However, the results of the study mentioned above demonstrated a negative relationship between treatment time and treatment compliance, which was not confirmed by the present study.

Sagarduy et al.[23] argue that factors of the patient's personality, such as decision-making and tolerance of frustration, are directly related to compliance to antiretroviral therapy. For Betencur et al.[19], psychoeducation can be used to address negative beliefs regarding treatment and to screen for symptoms of anxiety and depression. Chenneville et al.[24] point out some fundamental determinants for compliance to antiretroviral treatment among patients infected with HIV: an intervention capable of remembering patients, mainly younger ones, to take their medication; physical, cognitive, affective and/or environmental factors as facilitators or barriers to treatment compliance; the appropriate inclusion of a multi-professional health team; and providing enough information to encourage compliance. In addition, there is a strong association between the presence of moderate or severe levels of anxiety, symptoms of depression and low scores on quality of life scales, and low compliance to ART[19].

Limitations of the study

The analysis referring to questionnaires undoubtedly involves the individuality of the answers, which directly influences the evaluation of the score, since the subjects must look back on their own experience with the treatment to answer the questionnaire.

Contributions to the nursing, health or public policy fields

It is imperative to understand how the patients perceive themselves during the process of illness and treatment so that an individualized approach can be provided. In addition, the discussion about the factors that influence compliance to treatment with antiretroviral drugs is common among health professionals. In this sense, reinforcing the impressions with the evaluation of objective questionnaires contributes to the understanding of the patients' point of view about their own care.

CONCLUSION

In the present study, compliance to antiretroviral treatment among patients with the HIV virus was predominantly good/adequate. The main items of the CEAT-VIH questionnaire that contributed to this conclusion were the positive impact of the treatment on health and quality of life, few side effects after initiation of therapy and the positive self-evaluation of the participants regarding their compliance to ART.

The main barriers detected for compliance to ART were the lack of knowledge about current medications and having little or no information about the drugs. Therefore, adequate information and patient awareness should be a priority in ART care services. Finally, the importance of the relationship between patient and professional is reinforced, and the professional must also inform, explain and solve doubts to stimulate adequate compliance to antiretroviral therapy.

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