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ABSTRACT

Objective: to analyze adherence to antiretroviral therapy and the self-efficacy expectation in people living with the human immunodeficiency virus (HIV) in the light of social cognitive theory. Methods: cross-sectional, descriptive, epidemiological and quantitative study with people living with HIV. Data were collected from April to September 2018, through the "Cuestionario para la Evaluación de la Adhesión al TratamientoAntirretroviral" (CEAT-VIH) and the self-efficacy expectation scale, validated and developed in Brazil, where the Mann-Whitney test was used. The Poisson model was applied to assess the probability of good adherence to the CEAT-HIV tool. Results: the average age of 44 years was identified, with a predominance of men. Regular adherence was more representative. The highest median of adherence found was for the questions related to experience, effects and negative feelings. When adjusting the Poisson model, according to the CEAT-HIV tool, it appears that only education and the category related to attention, organization and planning to take antiretroviral therapy (ART) are jointly determining factors for good adherence. Conclusion: it was noticed a satisfactory non-adherence to medication treatment, a fact that is due to factors inherent to the ART, such as social vulnerability, stigma and relationships of self-efficacy expectation, undermining the maintenance of survival with greater morbidity and interfering with quality of life.

Keywords: Medication adherence. HIV. Self-efficacy. Cognitive social theory.

INTRODUCTION

Antiretroviral therapy (ART) is used by 25.4 million People Living with the Human Immunodeficiency Virus (PLHIV) around the world, while one-third of the population does not have access to treatment⁽¹⁾. The main objective of this therapy is the suppression of the viral load with immunological reconstitution and consequent improvement in survival and quality of life. The advances in medication have resulted in a change in the pattern of the pathology, from high lethality to chronification. To that end, the patient is required to take prolonged and persistent use of Antiretroviral drugs (ARDs)⁽²⁾.

Successful adherence to the ART is certainly still a major challenge! Despite the fact that

science has consummated in society the idea of adequate adherence, it becomes necessary to impact the population regarding the benefits obtained in the decline in HIV morbidity and mortality since the advent of the ART. Nevertheless, adverse effects, stigma and the need for periodic clinical and laboratory followup⁽³⁾ are barriers to ingesting at least 85% of the doses (good adherence) (4). recommended Furthermore. psychosocial aspects determining effects for the regular follow-up of medication prescriptions⁽³⁾.

In addition, the user's knowledge, selfefficacy and the degree of motivation and resilience towards the treatment are fundamental for the construction of strategies capable of supporting or hindering the treatment⁽⁵⁾. Thus,

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can the role of people living with HIV under their own care, based on their self-efficacy expectation, interfere with the adherence process to the ART?

In this context, the social cognitive theory, proposed by Bandura⁽⁶⁻⁷⁾, argues that the thought and action of human beings are constructed by interrelationships among personal, behavioral and environmental factors. For the author, the development of the individual happens through the understanding and interpretation of reality for the definition of his/her goals.

Cognitive social theory perceives the human being as an agent capable of exercising control over his/her thoughts, emotions, actions and environments, motivating the choice and persistence of behaviors, among them, for the health-disease process. The presence of positive self-efficacy expectations motivates the organization and execution of the possibilities of overcoming obstacles and difficulties to reach the objective⁽⁶⁻⁷⁾.

In this sense, assessing the self-efficacy expectation related to taking the medications – according to the prescription – results from the personal ability to deal with situations that may prevent their achievement. This follow-up can reveal people at greater risk of dropping out of treatment, making it a priority for nursing care and health care staff, in addition to subsidizing institutional interventions⁽⁸⁾.

Identifying factors that facilitate adherence to HIV treatment and underpinning these findings on theories become necessary actions to strengthen actions in favor of the quality of life of PLHIV, in addition to reducing complications arising from non-adherence. Thus, this study has the objective of analyzing adherence to antiretroviral therapy and the self-efficacy expectation in people living with HIV in the light of social cognitive theory.

METHOD

Cross-sectional, descriptive, epidemiological and quantitative study, guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)⁽⁹⁾ tool with a quantitative approach. The study site included five Specialized Assistance Services (SAE, as per its Portuguese acronym) in HIV from the I

Regional Health Management (GERES, as per its Portuguese acronym) of the State of Pernambuco. Currently, the aforementioned region has 17 SAEs linked to the Brazilian Unified Health System (SUS, as per its Portuguese acronym), which offer comprehensive and free services to PLHIV.

The study population was estimated based on the average of 5,414 PLHIV registered in the Computerized System for the Control of Drug Logistics (SICLOM, as per its Portuguese acronym) between the months of July and September/2017 in the selected services.

The study sample was carried out by random drawing in order to obtain a representation of approximately 30% (a viable capacity for the researchers to perform data collection). As for sample size calculation, the expected proportion of good adherence to antiretroviral therapy and good self-efficacy expectation of 50% were considered. The stratified equation was also used, ensuring proportionality among the study sites, with a minimum total of 358 cases (sample covered). Six PLHIV refused to participate in the study. Therefore, substitutions were made. Thus, services from the following municipalities were covered: Recife, Olinda, Igarassu, Camaragibe and Vitória de Santo Antão.

Medical charts of PLHIV aged 18 years or over and using the ART for at least six months (average time to achieve virological suppression) were included in the study. The medical charts of patients with follow-up in private medical offices and registered in the service's SICLOM just to obtain the ART, as well as the medical charts of users diagnosed with intellectual disability that made it impossible to understand the research, were excluded.

Regarding the independent variable, sociodemographic, behavioral and health clinical characteristics were used, such as gender, age group, education, income, diagnosisand treatment time, partner's serology, condoms use and drug consumption.

The dependent variable was described based on the ART adherence and self-efficacy expectation. In order to measure adherence, the validated version for the Portuguese language of the "Cuestionario para la Evaluación de la Adhesión al Tratamiento Antirretroviral" – CEAT-VIH was applied. It is an instrument

composed of 20 questions that address the main factors that can interfere with the ART adherence in adults. The minimum possible CEAT-VIH score is 17 and the maximum is 89 points. Accordingly, it receives three ratings: good adherence (score \geq 79) which equates to adherence \geq 85%; regular adherence, (between 53 and 78), which represents 50% to 84% adherence; and low adherence (< 53), meaning less than 50% adherence to the ART.

As for the second dependent variable, the self-efficacy expectation scale, validated and developed in Brazil, was used with the objective of investigating the self-efficacy expectation in situations that cause difficulties in following the ART prescriptions, allowing the identification of those that may represent risks for non-adherence. It is unifactorial, with 21 items, with answers on a five-point Likert scale (0 = I certainly will not take it; 1 = I do not think I will take it; 2 = I do not know; 3 = I think I will take it; and 4 = I certainly will take it). The scores range from 0 to $4^{(10)}$

There is no predetermined value for good expectation, since it is deduced that higher values indicate a better self-efficacy expectation for the ART adherence. The internal consistency of this scale is high (Cronbach's alpha = 0.96), suggesting that the scores can be a reliable measure of the investigated latent variable⁽¹⁰⁾.

Data collection took place between the months of April and September 2018. Subsequently, the data were double-entered and organized in an EPI INFO electronic spreadsheet, version 3.5.2. In order to perform the statistical analysis, data were exported to the

Statistical Package for the Social Sciences (SPSS), version 18.0. The team for data collection consisted of a nursing student and two nurses, previously trained by a researcher to apply the instrument.

Concerning the classification of the ART adherence by the scores (median and interquartile range) of the self-efficacy expectation scale, the Mann-Whitney test was used.

With respect to the multivariate analysis, factors that showed significance of up to 20% in the bivariate analysis were included. Poisson model with robust variance was applied to assess the risk for good adherence to the CEAT-VIH tool. In order to allow the permanence of the factors in the model, the adopted type I error was 5%.

The study obtained prior approval from the Research Ethics Committee of the hospital complex of the University of Pernambuco (UPE, as per its Portuguese acronym), through Opinion n° 2.545.008, meeting the ethical requirements proposed by Resolution 466/12 of the National Health Council.

RESULTS

Table 1 displays the sociodemographic, behavioral and clinical characterization of the interviewees, identifying the average age of 44 years and a predominance of men, totaling 222 (62.0%). The average numbers of time since diagnosis and treatment were 8.67 and 7.97 years, respectively.

Table 1. People living with HIV, according to sociodemographic, behavioral and health clinical characteristics. Recife, PE, Brazil, 2018.

Assessment factor	N	%	p-value [†]
Gender			
Female	136	38.0	< 0.001
Male	222	62.0	
Age group			
18 to 28	42	11.7	
29 to 39	82	22.9	< 0.001
40 to 60	215	60.1	
Over 60	19	5.3	
Education			
Illiterate	10	2.8	
(In) complete elementar school	144	40.2	< 0.001
(In) complete high school	146	40.8	
(In) complete collegeeducation	58	16.2	

To be continued

Monthly family income				
Up to a minimum wage (MW)	183	51.1		
> 1 to 2 MW	108	30.2		
> 2 to 3 MW	38	10.6	< 0.001	
> 3 to 4 MW	14	3.9		
> 4 MW	15	4.2		
Diagnosis time				
Lessthan 1 year	35	9.8		
1 to 5 years	96	26.8	< 0.001	
More than 5 to 10 years	96	26.8	<0.001	
More than 10 years	131	36.6		
Minimum – Maximum	0.50 -	- 33.00	=	
HIV treatment time				
Lessthan 1 year	41	11.5		
1 to 5 years	114	31.8	< 0.001	
More than 5 to 10 years	85	23.7	<0.001	
More than 10 years	118	33.0		
Minimum – Maximum	0.50 - 25.00		-	
Partnerhas HIV				
Yes	92	25.7		
No	123	34.4	< 0.001	
Without a partner	128	35.8	<0.001	
Unknown	15	4.2		
Condom use				
Yes	241	67.3		
No	35	9.8	< 0.001	
Sometimes	29	8.1	<0.001	
Without sexual intercourses	53	14.8		
Drug consumption				
Yes	129	36.0	< 0.001	
No	229	64.0	<0.001	

[†]p-value of the Chi-square test for proportion comparison (if p-value < 0.05, proportions differ significantly).

Descriptive statistics of the scores that assess the CEAT-VIH classification reveal that regular adherence was more representative in the assessment, as displayed in Table 2. The extremes of the scores ranged from 46 to 86 points, with an average of 74.8 points and standard deviation of \pm 5.8.

Table 2. People living with HIV undergoing antiretroviral treatment according to adherence, in line with the CEAT-HIV scores. Recife, PE, Brazil, 2018.

Assessment factor	N	%	p-value*
Good adherence	70	19.6	
Regular adherence	147	41.1	< 0.001
Low adherence	141	39.4	

 $[*]p-value \ of the \ Chi-square \ test \ for \ proportion \ comparison \ (if \ p-value < 0.05, \ proportions \ differ \ significantly).$

The examination of the content of the items displayed in Table 3 reveals the self-efficacy expectationbased on situations considered difficult to follow the medical prescription of the ART. It is observed that item 21 showed the greatest dispersion, with a high coefficient of variation (47%), when compared to the highest averages found, referring to items 02 and 20, wherethere was a difference of 0.75 points in the

average.

To that end, the scale scores are classified into three categories: they require greater attention, organization and planning in terms of taking medication (items 5, 6, 7, 13, 16, 17 and 19); they tend to decrease concern about the disease or confidence in the treatment, such as concern about obtaining an undetectable plasma viral load and health status (items 1, 2, 8, 12 and 20); related to negative experiences and

^{*}Minimum wage value at the time of the execution of this study: R\$954.00

affections with medication, taste, adverse effects, fear of discrimination and depression

(items 3, 4, 9, 10, 11, 14, 15, 18 and 21)⁽¹⁰⁾.

Table 3. Average and standard deviation of the items on the self-efficacy expectation scale to fulfill the prescribed antiretroviral therapy. Recife, PE, Brazil, 2018.

	QUESTION	AVERAGE	SD*
1	If I am in good health	3.90	0.59
2	If the amount of virus in my blood is so small that it does show up on the viral load test.	3.94	0.43
3	If I am upset and feeling down.	3.85	0.69
4	If I am discriminated against or rejected.	3.88	0.58
5	If I am busy or having fun.	3.76	0.82
6	If I am traveling for pleasure or work.	3.88	0.59
7	If I am on the street.	3.79	0.79
8	If I am feeling sick.	3.91	0.54
9	If I am with someone I do not want to know that I am a carrier of the AIDS virus.	3.73	0.92
10	If I have to take a lot of pills.	3.84	0.65
11	If I am nervous or annoyed.	3.89	0.59
12	If there is constant switching of physicians between my visits	3.90	0.49
13	If Ihave to take medications several times a day.	3.79	0.77
14	If I am with strange people.	3.77	0.87
15	If the medication is hard to swallow.	3.88	0.60
16	If it is a holiday or weekend.	3.92	0.50
17	If I have to change my eating or sleeping schedule	3.92	0.42
18	If the medication tastes bad or smells strong.	3.84	0.71
19	If I am doing things outside of my routine.	3.86	0.61
20	If I am with someone who thinks it is silly for me to take these medications.	3.94	0.45
21	If the medications are causing me a bad effect.	3.19	1.51

^{*}SD =standard deviation.

When adjusting the Poisson model for the ART adherence according to the CEAT-VIH tool, it appears that only education and the category related to attention, organization and planning to take the ART are jointly determining factors for good adherence to the ART. Accordingly, the probability of good adherence was 2.18 times higher among people with

college education compared to those with other levels of education.

In addition, it is also observed that the probability of good adherence was 1.31 times higher in the domain of attention, organization and planning, when compared to the other domains of the self-efficacy expectation scale, as expressed in Table 4.

Table 4. Probability of good adherence by means of CEAT-VIH, according to sociodemographic, behavioral and health clinical characteristics and the self-efficacy expectation scale. Recife, PE, Brazil, 2018.

	Adjustedanalysis		
Assessment factor	*Adjusted PR	\mathbf{CI}^{\dagger}	p-value [‡]
Education			
Illiterate	1.60	0.44 - 5.87	0.478
(In) complete elementar school	1.00	-	-
(In) complete high school	2.06	1.21 - 3.49	0.008
(In) complete collegeeducation	2.18	1.18 - 4.04	0.013
Attention, organizationandplanning	1.31	1.06 – 1.63	0.0142

[‡]p-value of the Wald test (if p-value < 0.05, the risk for good adherence differs from the reference level). [§]p-value of the Wald test (if p-value < 0.05, the increase in the score unit implies a significant increase in the risk for good adherence to CEAT-VIH).

DISCUSSION

The sociodemographic, clinical and behavioral health characterization of PLHIV has

^{*}PR -Prevalence ratio.

[†]CI –Confidence interval.

revealed a tendency towards the feminization of the disease⁽¹¹⁾. Nonetheless, corroborating the epidemiological profile studies, the research showed a predominance of the male gender, low education and failures in the regular use of condoms. Moreover, it is noted an increase in the prevalence of infection in young adults and in more vulnerable population groups, female sex workers, men who have sex with men and transsexual women in the literature⁽¹²⁻¹³⁾.

Low adherence to ARD regimens is a major problem for individual health, as well as for collective health, since it increases transmission with detectable viral loads and the development of viral resistance, in addition to the expense of complications from clinical treatments aggravated by HIV. Therefore, high priority should be given to the assessment of adherence behavior, as well as any necessary intervention for non-adherence⁽¹⁴⁾.

Current bibliographies show mutuality between levels of the ART adherence and socioeconomic aspects, with a positive emphasis on higher levels of education and monthly income and on those with greater family support and social support (15-16). Such correlations make it difficult to establish a standard adherence level for society. In this study, regular adherence was highlighted (50% to 84%) in terms of taking medications, and the direct correlation between better adherence and higher levels of education was also noticed.

For this reason, the self-efficacy expectation in terms of taking the ART in an adequate way is of fundamental importance in clinical practice, as it helps to individually assess situations that may undermine the adequate execution of medication prescriptions.

Despite the fact that the study showed high average self-efficacy expectations, the Social Cognitive Theory reveals that expectations can change, since self-efficacy is (inter) related to different daily situations (6). Although the highest averages found are expressed for the category of situations that tend to reduce concern about the disease or confidence in the treatment, the literature reveals that the highest averages are concentrated in the category that requires greater attention, organization and planning to take the medications, with the latter category being the

determinant in the multivariate risk analysis for good adherence to the CEAT-VIH tool⁽¹⁷⁾.

It is also clear that the lowest averages were concentrated in situations of experiences and negative affections in the medication process and in living with HIV. This fact can be explained because emotional factors can affect the judgment of personal capacity, undermining the execution of a certain proposed performance⁽¹⁷⁾.

Social cognitive theory argues that the individual perceives himself/herself as highly effective in performing a certain activity when it generates challenges. These motivate the person to develop and exercise his/herefficacy and serve as major determinants of interest⁽⁷⁾. This fact may justify that, among the highest averages found, maintaining virological suppression was one of them, as there is a great effort to stabilize the infection and control the viral replication.

This theory also analyzes and relates to the process of social diffusion of new behavioral patterns⁽⁶⁻⁷⁾. Accordingly, as expressed above, PLHIV adopt lifestyle and health habits that result in an undetectable viral load, and this result is the stimulus for the performance of innovative behaviors that enable changes in the reality of life⁽¹⁸⁾.

It is also considered that the individual in his/her way of acting has intentionality, anticipation, self-reactivity and self-reflection. Therefore, the individual himself/herself holds all the capabilities that allow him/her to achieve all his/herobjectives. In this sense, making PLHIV (co)responsible, in partnership with health professionals about successful medication, aims to ensure improvement in life quality and expectancy, in addition to selfesteem, favoring the self-care process and the belief that each person has about the control in his/her health-disease process⁽¹⁹⁻²⁰⁾.

Lack of adherence can also result from dropping out the service or interrupting the daily compliance with medication therapy. This fact can be related to a set of factors, ranging from a series of personal motivations unknown to the health services to the imperatives of the health professional-patient relationship⁽²¹⁾. In light of the above, nursing care is essential in this process, as it influences the provided care, reflecting on the results of intervention

measures, contributing to encouraging and guiding self-care practices, stimulating the adequatecompliance with the ART⁽²²⁾.

The theory by Bandura (1997) can also be applied to explain how the development of quality care can result in learning concerningthe ART adherence. Thus, the nurse, when strengthening the professional-client bond, is able to address satisfactory experiences for the daily intake of the ART based on genuine evidence. With this, domain experiences, that is, success with the use of the ART, is generated. The proof of such an act, through laboratory tests, generates opportunities for vicarious experiences⁽²³⁾.

Greater awareness and strengthening of (co)responsibility and the bonds established between the service – health professionals and patients are needed, in the sense of seeking a better health situation and quality of life, in order to strengthen treatment adherence, which sometimes shows instability and suffers from multifactorial influence⁽²⁴⁾.

Analyzing the ART adherence based on the Social Cognitive Theory allows to support the planning of actions that can improve adherence indicators, favoring the reduction of treatment dropout, and, consequently, the illness of PLHIV.

The limitations of this study are related to the fact that the data represent the reality of adherence and self-efficacy expectation to the ART in PLHIV from only one Regional Health Management in a Brazilian State, which may influence cultural and regional characteristics. On the other hand, the methodological rigor used and the internal validity of the study reflect the reliability of the data.

Regarding the limitations, it is worth emphasizing the fact that laboratory variables of interest, such as follow-up of viral load and CD4+ T lymphocytes of interest, could not be studied due to omission of information in the medical charts. Data collection obtained some self-reported information (such as condom use

and drug consumption), where it is not possible to check, in other data sources, which can cause bias in the collected information.

CONCLUSION

This study has the objective of analyzing the self-efficacy expectation in people living with HIV in the light of social cognitive theory and their ART adherence. When analyzing the adherence and the self-efficacy expectation to the ART in PLHIV, it was observed that most participants do not satisfactorily adhere to medication treatment, a fact that is due to factors inherent to the ART, such as social vulnerability, stigma and expectation relationships of self-efficacy, undermining the maintenance of survival with greater morbidity and interfering with the quality of life of patients.

Education and the category related to attention, organization and planning to take the ART stand out as jointly determining factors for good adherence to the ART. In this context, it can be inferred that it is necessary to encourage that these two factors can be used as tools for the planning of public policies regarding the topic under study.

Accordingly, in light of the current challenges associated with the ART adherence, the need to develop social strategies, specific to each institutional context, has been highlighted, since the main variables capable of influencing medication adherence are conditioned, in particular, to socioeconomic factors and the self-efficacy expectationin terms of following-up the ART prescription.

Greater follow-up of the ART adherence is suggested, assuming that adherence is a continuous and multifactorial process, which involves not only the guarantee of access to medications. Therefore, it is necessary that investigations that assess the ART adherence continue to be carried out, in such a way as to produce results that can support the planning of actions.

FATORES ASSOCIADOS À AUTOEFICÁCIA E À ADESÃO DA TERAPIA ANTIRRETROVIRAL EM PESSOAS COM HIV: TEORIA SOCIAL COGNITIVA RESUMO

Objetivo: analisar a adesão à terapia antirretroviral e a expectativa de autoeficácia em pessoas vivendo com o vírus da imunodeficiência humana (HIV) à luz da teoria social cognitiva. **Métodos:** estudo transversal, descritivo, epidemiológico

e quantitativo com pessoas vivendo com o HIV. Dados foram coletados de abril a setembro de 2018, através do "Cuestionario para la Evaluación de la Adhesión al Tratamiento Antirretroviral" (CEAT-VIH) e a escala de expectativa de autoeficácia, validada e desenvolvida no Brasil, onde foi utilizado o teste Mann-Whitney. Foi aplicado o modelo de Poisson para avaliação da probabilidade de boa adesão ao instrumento CEAT-VIH. **Resultados:** identificou-se a média de idade de 44 anos, predomínio de homens. A adesão regular apresentou maior representatividade. A maior mediana da adesão encontrada foi para as questões relacionadas à experiência, efeitos e sentimentos negativos. No ajuste do modelo de Poisson, segundo o instrumento CEAT-VIH, verifica-se que apenas a escolaridade e a categoria relativa à atenção, à organização e ao planejamento para tomada da terapia antirretroviral (TARV) são fatores conjuntamente determinantes para boa adesão. **Conclusão:** observou-se a não adesão satisfatória ao tratamento medicamentoso, fato que se deve a fatores inerentes à TARV, como vulnerabilidade social, estigma e as relações de expectativa de autoeficácia, comprometendo a manutenção da sobrevida com maior morbidade e interferindo na qualidade de vida.

Palavras-chave: Adesão à medicação. HIV. Autoeficácia. Teoria social cognitiva.

FACTORES ASOCIADOS A LA AUTOEFICACIA Y ADHESIÓN DE LA TERAPIA ANTIRRETROVIRAL EN PERSONAS CON VIH: TEORÍA COGNITIVA SOCIAL RESUMEN

Objetivo: analizar la adhesión a la terapia antirretroviral y la expectativa de autoeficacia en personas que viven con el virus de la inmunodeficiencia humana (VIH) a la luz de la teoría cognitiva social. **Métodos**: estudio transversal, descriptivo, epidemiológico y cuantitativo con personas viviendo con el VIH. Datos recolectados de abril a septiembre de 2018, a través del Cuestionario para la Evaluación de la Adhesión al Tratamiento Antirretroviral (CEAT-VIH) y la escala de expectativa de autoeficacia, validada y desarrollada en Brasil, para ello fue utilizada la Prueba de Mann-Whitney. Se aplicó el modelo de Poisson para evaluar la probabilidad de una buena adhesión al CEAT-VIH. **Resultados**: fue identificado un promedio de edad de 44 años, predominio de hombres. La adhesión regular presentó mayor representatividad. El mayor promedio de la adhesión encontrado fue para las cuestiones relacionadas a experiencia, efectos y sentimientos negativos. En el ajuste del modelo de Poisson, según el CEAT-VIH se verifica que solo la escolaridad y la categoría atención, organización y planificación para toma de la terapia antirretroviral (TARV) son factores conjuntamente determinantes para buena adhesión. **Conclusión**: se observó la no adhesión satisfactoria al tratamiento medicamentoso, hecho que se debe a factores inherentes a la TARV, como vulnerabilidad social, estigma y las relaciones de expectativa de autoeficacia, comprometiendo el mantenimiento de la supervivencia con mayor morbilidad e interfiriendo en la calidad de vida.

Palabras clave Adhesión a la medicación. VIH. Autoeficacia. Teoría cognitiva social.

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