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Profile of use of antiretroviral drugs by patients with HIV treated in Aracaju – SE, Brazil

Perfil de utilização de antirretrovirais por pacientes portadores do HIV atendidos no município de Aracaju/SE

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ABSTRACT

The acquired immunodeficiency syndrome (HIV/AIDS) is a serious public health problem and face problems related to lack of adherence to treatment. The aim of the study was to identify the profile of antiretroviral adherence to pharmacotherapy for patients with HIV/AIDS. We carried out a cross-sectional study from April to July 2009, at the Center of Medical Specialties Aracaju in Sergipe. Data were collected through interviews with a convenient sample consisting of 206 patients with HIV/AIDS who sought the service of Pharmacy Program of sexually transmitted diseases and AIDS. The semi-structured instrument used to assess socio-demographic characteristics and variables that characterize treatment adherence. The measure of adherence was performed by self-report (interview), defined as the criterion of three authors: Jordan (2000), Morisky-Green-Levine (1986) and Haynes-Sackett (1981). 47.1% of patients interviewed were living in the interior of Sergipe and there was a lower rate of AIDS among patients over 12 years of study. About half of the respondents did not work. Many patients said they had never stopped taking the medication because of social commitments (69.9%). However, only 29.9% stopped using medication due to impairment in their routine. Over 80% of respondents feel better since they started treatment. The data show that treatment adherence is compromised by factors inherent to the patients and the complexity of antiretroviral pharmacotherapy. Strategies such as the monitoring of pharmacotherapy may be crucial for optimizing adherence and promote rational use of medicines.
Keywords: **Acquired Immunodeficiency Syndrome; Anti-Retroviral Agents; Medication Adherence**

RESUMO

A síndrome da imunodeficiência adquirida (AIDS) é um grave problema de saúde pública e enfrenta problemas relacionados a falta de adesão ao tratamento. O objetivo do estudo foi identificar o perfil da adesão à farmacoterapia antirretroviral por pacientes portadores de HIV/AIDS. Foi realizado um estudo transversal, de abril-julho,2009, no Centro de Especialidades Médicas de Aracaju (CEMAR), em Sergipe. Os dados foram coletados por meio entrevistas, com uma amostra por conveniência composta de 206 pacientes portadores de HIV/AIDS que procuraram o serviço da Farmácia do Programa de doenças sexualmente transmissíveis e AIDS do Centro de Especialidades Médicas de Aracaju. O instrumento semi-estruturado utilizado avaliou características sócio-demográficas e variáveis que caracterizavam a adesão ao tratamento. A medida de adesão ao tratamento foi feita por meio de auto relato, em formulário de entrevista adaptado a partir três instrumentos previamente testados. 47,1% dos pacientes entrevistados moravam no interior e que houve menor frequência de AIDS entre os pacientes com mais de 12 anos de estudo. Cerca da metade dos entrevistados não trabalhava. Muitos pacientes afirmaram nunca terem deixado de tomar os medicamentos por conta de compromissos sociais (69,9%). Entretanto, apenas 29,9% deixaram de utilizar os medicamentos por considerar que sua rotina é prejudicada. Mais de 80% dos entrevistados se sentem melhores desde que iniciaram o tratamento. Os dados mostram que a adesão é comprometida por fatores inerentes aos pacientes e a complexidade da farmacoterapia antirretroviral. Estratégias como o seguimento da farmacoterapia podem ser determinantes para otimizar a adesão e promover o uso racional dos medicamentos.
Palavras-chave: **Síndrome de Imunodeficiência Adquirida; Antirretrovirais; Adesão à Medicação**

INTRODUCTION

The Human Immunodeficiency Virus (HIV) causes the Acquired Immunodeficiency Syndrome (AIDS), which induces immunological suppression to the carrier of the disease (AGRAWAL et al., 2012; POWERS et al., 2011). In accordance with WHO, in 2011, there were 34 million people living with HIV worldwide. Still in this year, 2.5 million new HIV infections and 1.7 million people died as a result of AIDS (WHO, 2013).

In Brazil, since the AIDS emergence in 1983, more than 205,000 deaths and 506,000 cases were registered in the country and from 1980 to June of 2008, a total of 506,499 cases of the disease were registered (GRANGEIRO et al., 2009; BRASIL, 2008). The mortality rate of HIV/AIDS in Brazil has decreased in 50%, the survival time of people living with the disease has increased at least five times and the infection prevalence in population of 15 to 49 years old stays stable, in low levels (GRANGEIRO et al., 2009; BRASIL, 2008).

Many factors have contributed to these results. Among which, the more relevant were: sanitation reform, the sociocultural context of 70s and 80s and the utilization of Antiretroviral Therapy (ART) against the disease (GRANGEIRO et al., 2009; SEIDL et al., 2007).

Although anti-retroviral therapy (ART) has facilitated the handling of the disease, has reduced the mortality and has improved the quality of life carriers, some patients have not enjoyed these advantages, mainly because the adherence of the treatment is decisive for the success of this treatment (SEIDL et al., 2007; AGRAWAL et al., 2012; CERDÁ et al., 2010). The treatment adherence may be defined as “compromise of active and intentional collaboration of the patient, with the goal of producing a preventive or therapeutically desired result” (WU, AMMASSARI & ANTINORI., 2002).

Polejack & Seidl (2010) investigated ways to evaluate the treatment adherence and could conclude that there are several ways, for example: self-report; the counting of pills in each new withdrawn of medicaments in the pharmacy; the utilization of dispensation records in the pharmacy; monitoring of the antiretroviral serum levels, and so forth, however there is not any “gold standard” way to evaluate treatment adherence yet, considering that adherence is a complex and dynamic phenomenon.

In this scenario, understanding the barriers to adherence became extremely important and this complex phenomenon was investigated in the last decades (PENN, WATERMEYER & EVANS, 2011). Researches done in South Africa show which factors can contribute to non-adherence to pharmacotherapy, such as the increased consumption of alcohol, the lack of previous experience with use of medicines in chronic diseases, the precarious access to health services, the low schooling and social stigma (PENN, WATERMEYER & EVANS, 2011; PELTZER et al., 2011).

In this context, the literature shows that the pharmacist may have a crucial role in the optimization of treatment adherence of patients with HIV/AIDS, decreasing the number of adverse reactions, increasing the survival time and improving the quality of life of the antiretroviral users (HORBERG et al., 2007; PENN, WATERMEYER & EVANS et al., 2011).

Therefore, find more effective ways to measure and monitor adherence still remains as a big research field to those who work with HIV/AIDS, mainly if considered that more effective measures would permit the development of strategies and more cost-effective interventions (LORSEHEIDER, GERONIMO & COLACITE, 2012).

Being thus duly explained, this work has as main goal to characterize the profile of antiretroviral utilization by patients with HIV/AIDS treated in Aracaju – SE, Brazil.

MATERIAL AND METHODS

Study Design

It was done a transversal study, with patients with AIDS treated in the ambulatory at the Center of Medical Specialties (Cemar) in Aracaju - SE, Brazil. Cemar belongs to a specialized ambulatory network and presents services of differents medical specialties that complement each other in relation to other offered services. Cemar is the only place where ambulatory service is offered to follow-up people with HIV/AIDS, in the state of Sergipe.

Sample and Length of the Study

The calculus of the size of the sample was done to a proportion of a finite population (MEDRONHO et al., 2003), adopting non-adherence as a dependent variable. Thus, it was considered that Cemar assists about 700 positive HIV patients, in use of ART per month. Nemes, Carvalho & Souza (2004) performed a Brazilian multicentre study, in which was observed the adherence rate of 75%, similar to the rates observed in developed countries. Therefore, the

non-adherence prevalence in HIV positive patients in this situation is 25%, sampling error of 5% and confidence interval of 95%. It was adopted this non-adherence prevalence to the calculus of the sample in this study.

The sample was calculated with 204 patients, selected by convenience as the first patients who received ART in the AIDS Pharmacy Program of Cemar, from April to July 2009. The patient screening was done in the moment of the weekly consultation, to positive serum patients, who were submitted to the National Program of Infection Control by HIV/AIDS virus.

The patients who participated of the study were adults (over 18 years old) who used ART at home, at least one month that did not need caregivers and agreed in voluntarily participate of the interview. Pregnant women in treatment, people with cognitive limitations and the ones who lived in supporting houses were excluded of this study.

Data Collection and Analysis

It was utilized an interview form to collect socio-demographic data: age, gender, ethnicity, place of residence, family income, schooling, marital status, co-habitation and use of legal and illegal drugs. Beyond frequent questions related to the aim of the research: if stopped taking the medicines for any reason (social compromise and forgetfulness) and if considers the treatment complex or hard. The forms were answered by the researcher during a direct interview with the patient.

It was also used a proposed instrument by Cerdá & Alminana (2004), to complement the form *Simplified Medication Adherence Questionnaire* (SMAQ). The SMAQ is largely used to evaluate the adherence in patients with HIV/AIDS. The instrument (interview form) is composed by three fields, adapted from three other instruments previously tested: (1) SMAQ: (2) modified Haynes-Sacket test; (3) Morisky-Green-Levine test (Cerdá & Alminana, 2004).

In this study, non-adherence was considered when one or more of the following situations were observed: do not take or interrupt the prescribed medicines; take less or more than prescribed dosage; alternate interval of time prescribed or alternate doses; do not follow dietary recommendations or other that goes along with medical prescription (JORDAN et al., 2000).

The instrument developed by Haynes, Taylor & Sackett (1981) offers high specificity and low sensibility. However, this method was considered, by some authors, as the most advisable for clinical use, used complementary to a test of the disease knowledge level. The method presented good adherence when the values were between 80% and 110%.

The Morisky-Green-Levine (1986) test aims to evaluate the patient behavior regarding habitual use of the medicine. This test has low sensibility and specificity (DE WULF et al., 2006). In this method was considered good accession when 100% of the answers were appropriate. Nevertheless, when at least one of the answers was inappropriate, the patient was classified in the group of low degree of adherence.

In this study, the Haynes and Sackett test (1981) was correlated to characterization of non-adherence, by Jordan et al. (2000), to substantiate this analysis. Thus, it was possible to verify the true implications of the factors that can affect non-adherence to the treatment. The specific analysis was done, initially, correlated to variable which features the non-adherence to the treatment, in the situation: “leave the treatment”, with another variable that also can feature the non-adherence to the treatment: “consider the treatment complex”. In this analysis, despite the two variables can feature the non-adherence, the first one is defining of non-adherence and, from that, it will be determined if the second one can influence this situation of non-adherence.

The variables considered as independents were: age, gender, ethnicity, family income, schooling, marital status, co-habitation, pharmacy access, time of treatment, use of legal and illegal drugs and consider the treatment complex or hard. The variable considered dependent was the non-adherence to the treatment that was featured by questions regarding: leave the treatment and consider the treatment complex or hard.

To analyze coherently, “leave the treatment” was classified in relation to three aspects: (1) if already stopped taking medicaments anytime (focused in situations when leave the medicines because of social compromises). This item does not depend since when this interruption has happened, if that has happened at least once in any moment of the treatment; (2) the person stopped taking the medication in the last week. This variable must delimitate the answer, because it is a short time during the treatment; (3) the person stopped taking medicines at least two days in the past two months. Finally, the adherence to the treatment was considered joint activity, in where the patient did not accept medical orientation only, but understood, agreed and followed the prescription.

The demographic data were analyzed by descriptive statistics through of absolute frequency

and relative frequency. To do the adherence analysis, were used the calculus of probabilities and the Yule correlation coefficient (Y) between dependent variables and independents. Both were analyzed by the software Epi-info 6.0 version.

The research project was approved by Ethics in Research Committee at Federal University of Sergipe, under protocol number CAAAE 1866.0.000.107-09, also authorized by Secretary of Health of Aracaju – SE. In this study, patients were informed about the goal of the research and they signed a term of free and informed consent.

RESULTS AND DISCUSSION

During the study 228 patients were interviewed, who searched the Pharmacy Service of AIDS Program of Cemar, and 4 did not want to participate of the interview and 18 did not meet the inclusion or did meet the exclusion requirements: five were pregnant, seven were beginning the treatment and six were under 18 years old. Thus, from 228 patients approached, the first 206 patients (90%) were selected to participate of the research.

The sample was composed by 58.7% of men, with age between 30 and 40 years old (44.2%), white ethnicity (43.2%), family income until two minimum salaries (84.5%) and complete high school (45.6%). Among the respondents 40.5% were single and 80.6% did not live alone (Table 1). Furthermore, 72% did not consider the treatment complex, have used ART for more than 5 years (56.3%), 83.5% affirmed having good access to pharmacy and 70% were not users of illegal drugs.

In the study, 42.7% from the respondents have forgotten at least once to take the medicines. However, 93.2% affirmed did not stop taking the medicament when they feel bad or when they feel good (87.9%). Moreover, 80.6% did not stop taking medicines in the last week (86.9%) and 71.4% for more than two days in the last three months (Table 2).

Correlating the variables 'consider the treatment complex' and 'stop taking the medicines due to social compromises' it was not evidenced strong or moderate correlation (Y=0.39). But correlating 'consider the treatment complex' and the variables 'stop taking medicines in the last week' and 'stop taking medicines at least two days in the last three months' it was verified positive and moderate correlation (Y=0.44) and strong (Y=0.60), respectively (Table 3).

Table 3 - Correlation between the variables of non-adherence and ART versus treatment complexity in the sample (n=206), in Aracaju (SE), from April to June 2009.

	Treatment Complexity		Y
	Yes	No	
Stopped taking medicines in the last week			
Yes	18	22	0.44
No	40	126	
In the past three months, have stopped taking medicines for over than two days			
Yes	28	31	0.46
No	30	117	

Source: Authors

In other words, there was higher proportion of individuals who stopped using the medicament at least two days in the last three months because they considered the treatment complex (48%). It is important to emphasize that, it was not observed moderate correlation or strong between the variables co-habitation, gender, family income, schooling and time of treatment with the variable 'complexity of the treatment' and the questions related to the variable 'stop the treatment'.

The correlation degree between use of illegal drugs and who considers the treatment complex (40%) was positive and moderate (Y=0.41), which suggests that use of drugs is a factor that may induce the non-adherence to ART. In the same way, it was found positive correlation, but moderate (Y=0.46), between the half of illegal drug users (50%) and non-utilization of medicines at least two days in the last three months (Table 4). However, it was not observed strong or moderate correlation between the other variables (Table 4). The probability of patients who consider having a good pharmacy access and who stopped taking medicines at least two days in the last 3 months was 31% (Y=0.35). Despite 88.8% from them, who consider having a good pharmacy access stopped taking the medicines in the last weekend, the correlation was weak (Y=0.25) (Table 4).

Regarding ethnicity, when analyzed the non-use of medicaments in the last 3 months at least twice, the correlation is strong and positive (Y=0.58), increasing the probability of the black ethnicity to do not accept the treatment (52%). However, it was not observed strong or moderate correlation between the variables complexity of the treatment and (Y=0.1) and stop taking the

medicines in the last weekend (Y=0.38) (Table 4).

Over the years the reason between the male and female gender (M:F) has been decreasing in Brazil, in accordance with accumulated data from 1980 to June 2013, a total of 686,478 cases of AIDS were notified in the country, in which 445,197 (64.9%) are men and 241,223 (35.1%) are women. In 2012, the detection rate of AIDS cases in men was 26.1/100,000 habitants and from 14.5 in women, in a reason of 1.7 case in men for each case in women. Since the epidemic beginning, the reason of genders has presented gradual variations over the time, in 2005 reached the shortest value (1.4), and since that have presented increases (BRASIL, 2013).

Regarding ethnicity/skin color, despite the concentration of cases among white people, the major detection rate is observed among black patients in the past 10 years in both genders. However, in the same period, it is observed a trend of decrease in this group and increase among white and mixed patients (BRASIL, 2013).

National data point the reduction of HIV/AIDS cases among people who have more than 12 years of study. For example, in 2006, there was decrease in the number of cases (by 5.3%) when compared to the year of 1990 (BRASIL, 2008; SOUZA et al., 2013). These data corroborate with data from the present study, because only 10.7% of the respondents have more than 12 years of study. Nevertheless, the same individuals who belong to this group have difficulties and doubts regarding transmission of sexually transmitted diseases.

The socio-economic inequalities worldwide interfere directly in the vulnerability of specific population to HIV/AIDS transmission (TAQUETTE, 2013). In the present study, the majority of individuals presented family income lower or equal to two minimum salaries, which confirms the pauperization of the epidemic.

In accordance with Brazilian epidemiologic data, from 2003 to 2012, it was observed that from the total cases of AIDS identified in men, the biggest detection rates were observed among those who belonged the age group from 30 to 49 years old (BRASIL, 2013).The collected sample also verified wide proportion of respondents between 30 and 60 years old. This can be justified by the fact that over the history, there was an increase of the incidence rates of AIDS in the age group over than 50 years, in men and women (PERDIGÃO, 2013).

The social isolation or the fact of living alone was one of the selected variables for being extremely appointed as risk factor of non-adherence in many chronic diseases. However, in AIDS, there are few studies and controversy results in relation to this situation (COLOMBRINI, LOPES & FIGUEIREDO, 2006). Some studies verified less adherence in the habitants of institutions or the ones who live alone. Although more recent studies suggest that the social support has important role to make pleasant stressful negative consequences, while the insufficient support from people of the socio-family environment or community seems affect negatively the treatment adherence, and also can lead to depression (SEIDL et al., 2007; SILVA & CAMARGO JUNIOR, 2011).

About illegal drugs, they frequently promote a silence pact between the health care professionals (that do not investigate the use) and patients (that do not reveal the use). The stereotypes associated to drug users impede these people to be seen in their singularities and make harder for the health care professional to face specific difficulties (LOPES & SILVA, 2012). According to Melchior et at. (2007), the chaotic life style of some drug users is factor to determine non-adherence to ART.

Considering marital status, the study from Seidl et al. (2007) showed the major percentage of married individuals (36.7%). This difference can be justified by one of the exclusion criteria utilized by the authors, as well as the method of data collection. During the interview, the patient reported difficulties to access the pharmacy services, because they lived in the interior of the state and depended of financial support to go to the capital. According to the AIDS National Program, the treatment actions for HIV patients, encompasses the increasing number of health unities at SUS to guarantee the access to ART. Beyond that, orientation of HIV patients by trained health professionals enabling better adherence to therapeutic.

In the analysis of obtained data it was possible to consider the intrinsic limitations of this method and the low adherence. During the study, the interviewer may have had bias, noticing that some patients may have been influenced to confirm the treatment adherence by considering an expected behavior by the health professional. On the other hand, the patient who says that does not have adherence, probably is saying the truth. Thus, the vulnerability of indirect methods (interview) is associated to the major probability of overestimation of the adherence and, therefore, underestimation of non-adherence (DE WULF et al., 2006).

The amount of people who stopped taking the medicines in the last week should be lower

than the observed value. The explanation may be in the memory of the patient. Normally, it is easier the patient remember what happened in the last week than what happened in the whole treatment. These data agree with the literature, because the forgetfulness is considered as one of the mainly fail causes of ART (MARQUES, 2013). The Yule correlation coefficient was moderate, which reaffirms that adherence seems increased when it was considered the factor more delimited time. Carvalho et al. (2003) in his study verified that the respondents referred forgetfulness as the main reason of fail in medicines taking.

In this study was observed that the probability of not taking the medicines because considered the treatment complex was high. However, when the patient answer that stopped taking the medicaments in three months is not the same of who stopped taking the medicines in the previous week to the interview. Therefore, in the past week may be intrinsic the feeling of guilty, carrying the fear of assume the mistake to the health professional. According to the literature, self-report is used to evaluate non-adherence and is opened to criticism as the patient may overestimate the adherence to medicines due to fears of reprisal (LIGNANI JUNIOR, GRECO & CARNEIRO, 2001).

Although Carvalho (2003) has associated the variable living alone as risk factor to non-adherence, in this study, the co-habitation was not correlated to non-adherence to ART. Still about habitation, friends support to the patient, feeling important to others and counting on somebody who likes you, were variables that contribute to treatment adherence. The supporting degree and reception by partners/family and friends is extremely important. Patients need help to take their medicines, both in remembrance of time table as in affective supporting, the received information and in the elaboration of strategies to facilitate medicaments administration (CARDOSO & ARRUDA, 2004).

The gender was not correlated to the complexity of the treatment or ART adherence. Even men, in general, which are more displeasing in relation to women to take medicines, probably, by the fact of being more excessive, for example, ingesting more alcoholic beverages and so neglecting the treatment. In Brazil, it is part of the common sense that alcoholic beverages and medicaments must not be mixed. This thought can contribute, even in people with high adherence, to stop taking the medicines to ingest alcoholic beverages, even if only socially (MELCHIOR et al., 2007).

It was not possible to observe, in this study, major probability of illiterates to do not accept ART, contradicting the literature. According to Nemes (2000), Pinheiro et al. (2002), Carvalho (2003) and Reynolds et al. (2004), is evidenced less adherence in people with low schooling, turning schooling a variable that induce to non-adherence. Studies show that low educational degree is associated to joblessness, as well as, family supporting and they are social factors directly associated with bad adherence to ART therapy (CARTAXO et al., 2013; GIR, VAICHULONIS & OLIVEIRA, 2005). The fact of this result had been so discordant to literature may be due to data limitation regarding schooling, by difficulties of categorizations of the schooling used in the original form, as non-specification of which level was complete in elementary school and high school in the sample of the present study.

Nemes et al. (2009) associated low schooling and family income as related factors with non-adherence, confirming that associations being consistent with national studies accomplished in local contexts and with several international studies. Although people with low income feel more pressure than other ones in the moment of the interview, maybe for considering a punishment for fail in the treatment. This situation can explain the dissonance between the found results and the data from literature, which associates low income to non-adherence (CARVALHO et al., 2007), what may suggest a fail in the analysis.

Even the sample was too short, the found results about use of illegal drugs are consistent with the literature according to some authors the users of illegal drugs are likely to non-adherence (ZUGE, 2009; MELCHIOR et al, 2007). When talking about illegal drugs, frequently these constitute taboos, producing a silence pact between the health care professionals (which do not investigate the use) and patients (which do not reveal the use). The stereotypes associated to drug users hide them in their singularities, impending health care professionals to assist them in their specific difficulties (MELCHIOR et al., 2007). Thus, this topic must be rethought carefully by health care providers and investigated deeper, without stereotypes.

Studies have shown that exist a big influence of the size and quality of the health services about ART adherence, in which may be demonstrated a relation between treatment adherence and satisfaction with the pharmacy services (NEMES, 2004; BONOLO et al., 2005; CARVALHO et al., 2007). It is suggested that may have an interaction between health services, to share achievements and difficulties found in the ways to evaluate and intervene about the

adherence question. The health institutions role is fundamental so the patient feels safe and supported. When the patient does not feel accepted by the institution and understood by professionals who assist them, they become more vulnerable to abandonment (CARDOSO & ARRUDA, 2004). However, more detailing in the evaluation of quality and the health services access is needed.

Despite black people do not consider more complex than non-black, the black population stops taking medicines more than white and mixed patients, in other words, they adhere the treatment less than the non-black. These data is consistent with the results found by Colombrini (2003) in his study. However it is important to emphasize that still do not exist enough studies that prove this situation. Still considering the fragmentary nature, practically there is not mention to variable ethnicity in the Brazilian literature, as though, once stratified data by social indicators (as schooling, occupation or place of residence) there is no space left to characteristics related to ethnic origin. Basing in the cultural standards from different population segments, which also can be defined from ethnic origin, and to prejudice manifested to these segments (BASTOS & SZWARCWALD, 2000).

Regarding treatment time, it was reported major difficult to continue with good adherence while the time pass. A justification to this fact is the forgetfulness due to the daily activities. According to Melchior et al. (2007), this experience highlights again the importance of understanding the adherence as a dynamic process and people who adhere to the treatment may have difficulties, during the treatment, as well as who initially do not adhere can overcome barriers and adhere to the therapy. The continued attention to ART adherence should have priority in the health services with professionals respecting and supporting the patients choices (VERVOORT et al., 2007; CARVALHO et al., 2008).

As limitations of this study, deserves to be highlighted the sampling by convenience, not allowing that results to be generalized, as well, the utilization of information only coming from self-report about prescribed therapeutic scheme. So, there is the possibility of mistakes in this information.

For the characterization of adequate adherence in future studies, it is necessary confrontation between self-report and registers about adherence behavior in the medical records. It is still necessary emphasize that HIV/AIDS is a chronic disease still stigmatizing, the questions of psychosocial nature have great relevance, adding to the challenges of public health. The interdisciplinary teams constitution seems have fundamental importance to the qualification of assistance provided, facilitating adequate approach to the therapeutic andpsychosocial difficulties and of the ART adherence in people living with HIV/AIDS.

Despite the undeniable importance of ART adherence, such actions should be supported by public actions in the political and social context, such as actions from organized society that aims the reduction of prejudice and discrimination. Intervention strategies must be developed even before the ART beginning. Likewise, health team must adopt indicators to adherence accompaniment. This may help to prevent or minimize the occurrence of future resistance to ART, improve the treatment results, as well reduce government spending. The adoption of these indicators should be one of the main objectives of the National Program of ART distribution.

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Table 1 - Distribution of the socio-demographic variables in the sample (n=206), of Aracaju (SE), April to June 2009.

Variables	Frequency	%
Gender		
Male	121	58.7
Female	85	41.3
Ethnicity		
White	89	43.2
Mixed	75	36.4
Black	42	20.4
Schooling		
Illiterate	30	14.6
Elementary School	60	29.1
High School	94	45.6
Higher Education	22	10.7
Age Group (in years)		
18 to 25	8	3.9
26 to 29	17	8.3
30 to 40	91	44.2
41 to 60	87	42.2
> 60	3	1.5
Family Income (in minimum salaries)[1]		
≤ 2	174	84.5
3 – 5	22	10.7
5 – 7	3	1.5
> 7	7	3.4
Marital status		
Single	104	50.5
Married	40	19.4
Stable Union	33	16
Widower	29	14.1
Co-habitation		
Live alone	40	19.4
Live with spouse and others	166	80.6

Subtitle: [1] minimum national salary at the date of the study R$465.00
Source: Authors

Table 2 - Distribution of the SMAQ variables (adapted) in the sample (n=206), in Aracaju (SE), April to June 2009.

Variables	Frequency	%
Have forgotten taking medicines		
Yes	88	42.7
No	118	57.3
Stopped taking medicines in the last week		
Yes	27	13.1
No	179	86.9
In the past three months, have stopped taking medicines for over than two days		
Yes	59	28.6
No	147	71.4
Not taking medicines in the last week		
None	166	80.6
≤ 2 times	19	9.2
3 – 5 times	6	2.9
6 – 10 times	2	1
>10 times	13	6.3
Stopped taking medicines when feel bad		
Yes	14	6.8
No	192	93.2
Stopped taking medicines when feel better		
Yes	25	12.1
No	181	87.9

*Subtitle: * Moderate and positive correlation ** strong and positive correlation*
Source: Authors

Table 4 - Correlation between the variables use of illegal drugs, Access to pharmacy services and ethnicity versus treatment complexity, stopped taking medicines in the last weekend and stoped taking medicines at least two days in the past three months in the sample (n=206), in Aracaju (SE), from April to June 2009.

	Use of Illegal drugs		Y	Access to pharmacy		Y	Ethnicity		Y
	Yes	No		Good	Bad		Black	Non-black	
Consider the treatment complex									
Yes	4	8	0.41*	50	8	0.14	13	45	0.1
No	6	29		122	26		29	119	
Stopped taking medicines in the last									
Yes	1	4	-0.04	24	3	0.25	9	18	0.38*
No	9	33		148	31		33	146	
Stopped taking medicines at least two days in the past three months									
Yes	5	10	0.46*	53	6	0.35*	22	37	0.58**
No	5	27		119	28		20	127	

** Moderate and positive correlation ** strong and positive correlation*
Source: Authors