

Sleep Quality in HIV-positive Outpatients*

QUALIDADE DO SONO EM PORTADORES DO VÍRUS DA IMUNODEFICIÊNCIA HUMANA

CALIDAD DEL SUEÑO EN PORTADORES DEL VIRUS DE LA INMUNODEFICIENCIA HUMANA

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ABSTRACT

The objective of this study was to characterize the sleep quality of Human Immunodeficiency Virus (HIV) seropositive outpatients with or without AIDS symptoms. This is a descriptive and cross-sectional study. Sociodemographic and clinical data were collected by means of a questionnaire, and sleep quality by means of the Pittsburgh Sleep Quality Index, Brazilian version. Participants were 122 subjects (55.7% male, 44.3% female; mean age 42.3 ± 8.9 years); 53.3% reported good sleep quality and 46.7% reported poor sleep quality. Subjects reported sleeping a mean of 7.3 (± 1.8) hours; sleep latency was 23.2 (± 26.2) minutes, and sleep efficiency, 87.8% (± 14.4). A significant association was found between good sleep quality and: having a partner; undetectable viral load; and maintenance of risk behavior. It is recommended that nursing professionals systematically include questions regarding sleep when evaluating patients with HIV/AIDS, so that changes are detected early and relevant background information is obtained in order to plan interventions.

DESCRIPTORS

Sleep
HIV
Nursing care

RESUMO

Este estudo teve por objetivo caracterizar a qualidade do sono de pessoas com o vírus da imunodeficiência humana (HIV) – AIDS –, com ou sem manifestações clínicas e sob tratamento ambulatorial. Para tal, foi realizada pesquisa descritiva e transversal. Os instrumentos utilizados foram: Questionário de Caracterização Sociodemográfica e Clínica; Índice de Qualidade de Sono de Pittsburgh (PSQI-BR). Participaram da pesquisa 122 pacientes (55,7% de homens e 44,3% de mulheres, com idade média de 42,3 (± 8,9 anos), dos quais 53,3% referiram apresentar sono de boa qualidade e 46,7%, sono de má qualidade. Dormiam, em média, 7,3 (± 1,8) horas, com latência de 23,2 (± 26,2) minutos e eficiência do sono de 87,8% (± 14,4). Observou-se associação significativa entre o sono de boa qualidade e os seguintes fatores: ter companheiro(a); apresentar carga viral indetectável; manter comportamento de risco. Recomenda-se que os profissionais de enfermagem incluam sistematicamente questões sobre o sono ao avaliarem o paciente com HIV/AIDS, detectando alterações precocemente e reunindo subsídios para o planejamento de intervenções.

DESCRIPTORIOS

Sono
HIV
Cuidados de enfermagem

RESUMEN

Se objetivó caracterizar la calidad del sueño de portadores del virus de inmunodeficiencia humana (VIH), con o sin manifestaciones clínicas de SIDA y bajo tratamiento ambulatorio. Investigación descriptiva y transversal. Los instrumentos utilizados fueron: Cuestionario de Caracterización Sociodemográfica y Clínica; Índice de Calidad del Sueño de Pittsburgh (PSQI-BR). Participaron 122 pacientes (55,7% hombres, 44,3% mujeres, edad promedio 42,3±8,9 años), de los cuales 53,3% refirieron buena calidad de sueño y 46,7% mala calidad. Dormían en promedio 7,3 (±1,8) horas, con latencia de 23,2 (±26,2) minutos y eficiencia del sueño de 87,8% (±14,4). Se observó asociación significativa entre buena calidad de sueño y: tener compañero; carga viral indetectable; observar comportamientos de riesgo. Se recomienda que los profesionales de enfermería incluyan sistemáticamente preguntas sobre el sueño al evaluar al paciente con VIH/SIDA, detectando alteraciones precozmente y reuniendo elementos útiles para planificación de intervenciones.

DESCRIPTORIOS

Sueño
VIH
Atención de enfermería

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INTRODUCTION

In 2009, according to the Ministry of Health, there were 38,538 new cases of AIDS (*Acquired Immune Deficiency Syndrome*) in Brazil. This disease affects millions of people globally, although the figures have been falling across all countries, including Brazil⁽¹⁾.

AIDS can appear after the human organism has been infected with the human immunodeficiency virus, referred to as HIV. The disease is highly progressive, with continuous viral replication in several cellular and anatomical structures, with results mainly related to the destruction and dysfunction of T lymphocytes, which express the antigen of the CD4 membrane (T-CD4+ lymphocytes), as well as of other immune system cells. Immunodeficiency results from the progressive depletion of T-CD4+ lymphocytes, and, in its most severe form, it is manifested by the emergence of opportunistic infections and neoplasms, which characterize AIDS⁽²⁾.

The first signs and symptoms of HIV infection are similar to those of other infectious diseases, such as mononucleosis (persistent fever, headaches, sore throat, muscular pain, skin rashes, palpable ganglia of the arms, neck, groin that persist for some time), and may range from one person to the other⁽¹⁾. The appearance of opportunist infections and neoplasms are what define AIDS. In these situations, the T-CD4+ lymphocyte count is usually below 200 cells/mm³⁽²⁾.

In addition to the physiological and clinical alterations, individuals with AIDS can suffer with altered psychological factors and with discrimination from society and also from other individuals with HIV/AIDS. Some years ago, discovering this diagnosis was the same as receiving a *death sentence*. Currently, the technological advancements, particularly antiretroviral therapy, have helped extend the lives of these individuals. However, the stigma involving people with HIV/AIDS persists^(1,3).

AIDS is currently considered a chronic disease. Although this fact minimizes its life-threatening aspect, the several organic, physiological, and psychological aspects inherent to the syndrome may increase its negative impact on quality of life. It is known that quality of life is closely related to several factors, including quality of sleep. A disturbed quality of sleep is a common aspect of chronic diseases, because sleep is directly affected by psychophysiological disturbances, causing insomnia, daytime sleepiness, and a diminished capacity to perform activities of daily living⁽⁴⁾. Hence, patients who become anxious because of the disease have a compromised quality of sleep, and may, therefore, show signs of depression⁽⁵⁾.

Several authors point out that there are uncountable factors that can have a negative effect on the quality of

sleep of individuals with HIV/AIDS. Quality of sleep and daily sleep are related to fatigue, anxiety, and depression, because fatigue is caused by multiple factors, which are interrelated⁽⁶⁾. Another study reports that HIV-positive people have sleep quality disturbances because of the antiretroviral medication they take, and therefore they face a higher chance to suffer from these disorders. Hence, compared to patients without the disease, it is observed that they have twice as many sleep alterations⁽⁷⁾. It is observed that the quality of sleep in patients in an advanced stage of the disease may be related to the number of CD4+ cells, because, the smaller the number of these cells, the greater the sleep-related problems, as the advanced disease causes symptoms such as pain, diarrhea, incontinence, fever, coughing, and dyspnea⁽⁸⁾.

It is known that sleep disturbances may be an expressive impact factor on people's lives. They may relate to insomnia, respiratory disorders, depression, and nocturnal movement disorders. One bad night's sleep can cause harms in the short, mid or long terms, because it affects one's daily activities and professional performance, in addition to causing mood and physiological alterations⁽⁹⁾.

Therefore, literature has given more and more evidence regarding the relevance of assessing quality sleep as part of the clinical assessment of patients which chronic diseases, and it should be recognized and promptly implemented by healthcare professionals. Regarding patients with HIV/AIDS, a population which is expected to present a considerable prevalence of sleep-related complaints, it is essential to identify those complaints in order to estimate their effects on quality of life and, above all, seek the knowledge to support any necessary interventions.

Based on the information about the quality of sleep of HIV/AIDS patients, it is possible to provide nurses with the necessary information to permit them to plan interventions aiming to improve care, covering this aspect that is often disregarded, and, thus, promote a better quality of life to these individuals.

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OBJECTIVE

To characterize the quality of sleep of individuals with HIV/AIDS, with or without clinical AIDS symptoms.

METHOD

This exploratory, descriptive study was performed using a quantitative approach. The study locations were three clinics of a university hospital in Southeast Brazil: Day Hospital for AIDS patients (DH-Aids); outpatient clinic of communicable diseases; Center for Clinical Research on HIV/AIDS (CCR).

The subjects were 122 patients, of both genders, who met the following inclusion criteria: age equal to or above 18 years; having the clinical and cognitive conditions required to answer the proposed instruments; voluntary participation in the study, sign the Free and Informed Consent Form.

After receiving authorization from the referred services, the patients were approached at the location of their appointments, when a presentation of the study was made and they were invited to participate. Patients who agreed signed the Free and Informed Consent Form, and the researcher applied the instruments in the form of an interview, reading them out for each patient and recording their answers.

The interviews were conducted using semi-structured forms, which included questions regarding the patients' identification, socioeconomic profile, as well as their health and treatment history. The Pittsburgh Sleep Quality Index (PSQI-BR) was used to assess quality of sleep and sleep disturbances. The PSQI-BR has been validated for the Portuguese language and assesses the quality of sleep for the last month preceding the interview. It has 19 questions that comprise seven assessment components: quality of sleep, latency, duration, efficiency, nocturnal sleep disturbances, use of sleep medication, and daytime sleepiness. Each component receives a score from zero to three, in a way that the final score on the instrument can range between zero and 21. The higher the score, the worse the quality of sleep, and scores higher than five indicate poor sleep quality^(4,10).

Data analysis was performed using descriptive statistics (central tendency and dispersion; absolute numbers and percentiles); Chi-Square or Fisher's Exact tests were used to assess the association between quality of sleep (good or bad) and the categorical variables; Mann-Whitney test to compare the patients with good or poor quality of sleep considering the numerical variables; Cronbach alpha coefficient to measure the internal consistency of the PSQI-BR.

The study was approved by the Research Ethics Committee of the Institution on April 8, 2009 (protocol CEP 256/2009), in compliance with Resolution 196/96 of the National Health Council, which regulates human research in Brazil.

RESULTS

Interviews were performed with 122 patients; 68 men (55.7%) and 54 women (44.3%). The patients' mean age was 42.2 (\pm 9.0) years, with a median of 41.9 years. It should be noted that 86 patients (70.5%) were between 31 and 50 years of age, and only three (2.5%) were older than 60 years. Most patients (64 or 52.4%) reported having a partner. The mean years of formal education was 8.1 (\pm 3.8), with a median of 8.0. The reported mean family income was 3.7 minimum salaries (\pm 4.3) and a median

of 2.5. Regarding occupation, 63 (51.6%) patients referred being employed, 34 (27.9%) retired or unemployed, 24 (19.7%) inactive, and one (0.8%) did not reply.

The patients' mean time since the HIV diagnosis was 9.9 years (\pm 5.8) with a median of 10 years, and the mean time of treatment was 8.1 years (\pm 5.2), with a median of 8.5 years. Regarding the means of HIV infection, it was observed for 81 patients (66.4%) the means of infection was sexual, through their partner, former partner, or a casual sexual relationship, and 30 patients (24.5%) were unable to refer how they became infected or provided dubious information. Only 10 (8.2%) patients were infected through blood contact (drug use or transfusion). Nineteen patients (15.6%) reported maintaining the risk behavior. Regarding the stage of the disease, 31 patients (25.4%) were in stage A (comprising subtypes A1, A2 and A3); 13 patients (10.6%) in stage B (including subtypes B1, B2 and B3); and 76 patients (62.3%), in stage C (subtypes C1, C2 and C3). Regarding treatment, 112 patients (91.8%) used retroviral drugs, and 50 (41%) used the non-nucleoside reverse transcriptase inhibitor efavirenz. The viral load was undetectable in 72 patients (59%). The medical records of two (1.7%) patients did not provide the necessary data.

It was found that 65 patients (53.3%) reported having good sleep quality, whereas 57 (46.7%) reported poor sleep quality, according to the score obtained on the PSQI-BR. The mean score was 6.1 (\pm 4.1), with a median of 5.0. The internal consistency of the instrument, for this specific population, was satisfactory and with a Cronbach alpha = 0.74.

Table 1 lists the sociodemographic and clinical characteristics that showed a significant association with the participants' quality of sleep.

According to the data on Table 1, a significant association was observed between the quality of sleep and the following variables: marital status, with a higher percentage of good quality sleep among patients living with a partner; maintaining the risk behavior, with a smaller percentage of patients with poor quality of sleep among those who reported maintaining the risk behavior; taking efavirenz, with a higher percentage of patients with poor quality of sleep among those who did not take efavirenz; viral load, with a greater percentage of patients with good quality of sleep among those with an undetectable viral load.

No significant association was observed between quality of sleep and the following variables: gender, occupation, means of infection with HIV, stage of the disease, and number of antiretroviral drugs in use.

Furthermore, the Mann-Whitney test did not show any significant difference between patients with good and poor quality sleep regarding the following variables: age, education, family income, number of individuals in the household, time since diagnosis, time of treatment, CD4-cell count number of antiretroviral drugs in use, and the number of other drugs in use.

Table 1 – Sociodemographic and clinical characteristics with a significant association with the quality of sleep of patients with HIV/AIDS treated at a university hospital - Campinas, 2009

| Variables | | Sleep quality | | p* |
|------------------------|-------------------------------|---------------|---------------|--------|
| | | Good (n = 65) | Poor (n = 57) | |
| | | n (%) | n (%) | |
| Marital status | Living with a partner | 42 (34.4) | 22 (18.0) | 0.004* |
| | Living without a partner | 23 (18.8) | 35 (28.7) | |
| Risk behavior | Maintains | 15 (12.3) | 4 (3.3) | 0.04† |
| | Does not maintain | 48 (39.3) | 52 (42.6) | |
| | No information | 2 (1.6) | 1 (0.8) | |
| Takes efavirenz | Yes | 32 (26.2) | 18 (14.8) | 0.00 † |
| | No | 25 (20.5) | 37 (30.3) | |
| | No antiretroviral drug un use | 8 (6.6) | 2 (1.6) | |
| Viral load | Detectable | 23 (18.9) | 22 (18.0) | 0.04† |
| | Undetectable | 42 (34.4) | 30 (24.6) | |
| | No information | - | 5 (0.41) | |

Table 2 illustrates the results referring to the habitual sleep characteristics of patients divided into groups according to the quality of sleep.

A significant difference was observed among patients with good and poor quality sleep, according

to the PSQI-BR, in terms of the following habitual sleep characteristics: latency; sleep duration and sleep efficiency. No significant difference was observed regarding the bedtimes and wakeup times (Table 2).

Table 2 – Comparison of habitual sleep characteristics between patients with good and poor quality sleep - Campinas, 2009

| Habitual sleep characteristics | Good quality sleep (n = 65) | | | Poor quality sleep (n = 57) | | |
|--------------------------------|-----------------------------|-----|--------|-----------------------------|-----|--------|
| | Mean | SD† | Median | Mean | SD† | Median |
| Bedtime | 22h35 | 75 | 22h30 | 22h46 | 109 | 22h30 |
| Latency (min.)* | 15 | 14 | 10 | 32 | 33 | 20 |
| Wakeup time | 6h53 | 95 | 6h45 | 6h50 | 94 | 6h45 |
| Duration of sleep* (hours) | 8.1 | 1.3 | 8.0 | 6.4 | 1.8 | 6.0 |
| Efficiency (%)* | 95 | 8 | 97 | 80 | 16 | 82 |

* variables in which p < 0.05 in the Mann-Whitney test † SD = standard deviation

Table 3 lists the score on each component of the PSQI-BR, as well as the overall score on the instrument, of patients with good and poor quality sleep.

According to the data on Table 3, a significant difference was observed between patients with good and poor quality of sleep, for all components of the PSQI-BR (p < 0.05).

Table 3 – Comparison of the overall and individual component score of the PSQI-BR among patients with good and poor quality sleep - Campinas, 2009

| PSQI- BR components | Good quality sleep (n = 65) | | | Poor quality sleep (n = 57) | | |
|--------------------------|-----------------------------|-----|--------|-----------------------------|-----|--------|
| | Mean | SD† | Median | Mean | SD† | Median |
| C1 – Quality of sleep* | 0.8 | 0.5 | 1.0 | 1.7 | 0.8 | 2.0 |
| C2 – Sleep latency* | 0.7 | 0.8 | 1.0 | 2.0 | 0.9 | 2.0 |
| C3 – Duration of sleep* | 0.2 | 0.4 | 0.0 | 1.2 | 1.2 | 1.0 |
| C4 – Sleep efficiency* | 0.1 | 0.4 | 0.0 | 1.1 | 1.2 | 1.0 |
| C5 – Sleep disturbances* | 0.7 | 0.6 | 1.0 | 1.6 | 0.6 | 2.0 |
| C6 – Sleep medication* | 0.1 | 0.5 | 0.0 | 0.8 | 1.3 | 0.0 |
| C7 – Daytime sleepiness* | 0.4 | 0.6 | 0.0 | 1.2 | 0.9 | 1.0 |
| Overall score* | 3.0 | 1.5 | 3.0 | 9.6 | 3.1 | 9.0 |

The factors that most usually caused sleep difficulties among the patients with poor quality sleep were: waking up in the middle of the night or too early in the morning (34, or 27.9%), getting up in the middle of the night to go to the bathroom (29 or 23.8%), and other reasons (28 or

23.0%). Among patients with good quality of sleep, the most common factors causing sleep difficulties were getting up in the middle of the night to go to the bathroom (7 or 5.7%) and feeling cold (7 or 5.7%).

DISCUSSION

This study was performed with 122 adults with HIV/AIDS, of both genders; a similar percentage of men and women (55.7% and 44.3%, respectively), with 1.2 men for each woman. HIV infection, once considered a predominantly male disease, no longer presents this difference. Over the years, the gender difference has reduced progressively, and the current proportion in Brazil is of 1.5 man for each woman⁽¹⁾. The predominant age group was between 31 and 50 years (70.5% of patients). It is observed that this age group continues concentrating the highest number of cases in Brazil, although it has been recorded that the population aged 50 years or older has increased⁽¹⁾.

It may be considered that the patients had a low educational level, as well as a low reported family income, with an expressive percentage of unemployed patients, despite their being in a productive age. In association with the patients' low education level, the fact that they live in regions that add adverse factors, such as the lack of infrastructure, scarce services and restricted public policies, in addition to people with a low income, increase the occurrence of problems, such as alcohol and drug use and the prevalence of sexually transmissible diseases⁽¹¹⁾. Some studies show there is a greater incidence of AIDS among men and women with a lower educational level, with a small variation across the regions of Brazil, and a shift, with time, from groups with a higher education level to those with a lower education⁽¹²⁾. Furthermore, over the last few years there has been a process of centralization and pauperization of the epidemics⁽¹¹⁾.

The mean time since diagnosis, nearly ten years, as well as the long treatment with antiretroviral drugs (a mean 8.1 years) are in agreement with national epidemiologic studies, which have shown that the survival rates of HIV/AIDS patients has increased, and recently achieved a median of nine years. In this sense, the use of antiretroviral drugs had a decisive participation⁽¹³⁾.

Most patients became infected with HIV through sex. This is in line with national data^(1,13), which show that sex is the main form of HIV transmission. Today, it is observed that the high proportion of infected women is due to heterosexual relationships, probably their partners, and that the prevalence among drug users has fallen⁽¹⁾ because of harm reduction programs and the higher mortality among drug users. Most patients (62.3%) were in an advanced stage of the disease, i.e., stage C. However, 59% of the subjects had an undetectable viral load on their medical record. No national data were available regarding these characteristics.

Most of the present study patients (53.3%) reported having good quality sleep. It should be emphasized that yet a significant part, 46.7%, experienced poor quality sleep. These data partly disagree with other studies on the quality of sleep of HIV/AIDS patients, which report al-

tered sleep quality patterns in greater percentages (80% to 100%), attributed to the HIV infection, itself, an other related factors^(7-8,14).

The mean score on the PSQI-BR was 6.1 (± 4.1). Other studies with HIV/AIDS patients obtained a mean score of 6.7 (± 3.8)⁽¹⁵⁾, 8.1 (± 3.9)⁽¹⁶⁾, 8.5 (4.0)⁽¹⁷⁾, 9.4 (± 4.4)⁽¹⁴⁾, 10.0 (± 5.0)⁽¹⁸⁾ and 12.3 (± 3.9)⁽⁸⁾. It is emphasized that these studies were performed with smaller samples compared to the present study, and that, in some, the majority of participants were men^(15,17-18) while in others the majority was women^(8,14,16), and in different proportions than that of the present study. Furthermore, the authors investigated factors associated with the quality of sleep that were not addressed herein, such as depression, stress, and treatment adherence, which could partly explain the differences observed. The subjects' age was the most similar factor across the studies, and other aspects regarding the sample, such as time since diagnosis, treatment time, use of antiretroviral drugs, and stage of the disease, in addition to not being provided in detail in every study, apparently did not help explain these differences.

The habitual sleep characteristics of patients who reported having good quality sleep were similar to those of healthy adults, with a mean duration of eight hours, mean latency of 15 minutes and efficiency of 95%⁽⁴⁾. It is important to highlight that the patients who reported experiencing poor quality sleep did not present an expressive deterioration of sleep patterns, which had a duration near six and a half hours, mean latency of 32 minutes, and efficiency of 80%.

Other studies using the PSQI found similar sleep patterns only for the present study subjects with poor quality sleep, or further deteriorated: 64%⁽⁸⁾ to 75%⁽¹⁷⁾ of patients presented a sleep duration of less than seven hours, which occurred in 54% of patients with poor quality sleep in the present study; latency greater than 30 minutes was reported in 51%⁽¹⁷⁾, 52%⁽¹⁴⁾ and 70%⁽⁸⁾, against 68% observed in the present study, which was the only compromised characteristics compared to the others; in others, 13%⁽¹⁷⁾, 22%⁽⁸⁾ and 33%⁽¹⁴⁾ of patients reported sleeping less than five hours every night, e 14%⁽¹⁷⁾, 22%⁽⁸⁾ and 26%⁽¹⁴⁾ had a sleep efficiency of less than 65%. These characteristics were observed, respectively, in 32% and 21% of patients with poor quality sleep, and in 10% and 11% of all patients in the preset study. Some authors did not report these characteristics in their studies^(15-16,18).

Only 18.9% of patients reported high daytime sleepiness, or, considering the patients with poor sleep quality exclusively, 35%. In other studies, these complaints were referred by 25%⁽¹⁷⁾, 42%⁽¹⁴⁾ and 68%⁽⁸⁾ of patients. Daytime sleepiness, observed more frequently among patients with poor quality sleep, may be related to the daily effort and fatigue⁽¹⁴⁾. This may be assigned to the fact that these patients' sleep at night is not sufficiently repairing, due to the frequent interruptions.

Indeed, the factors that caused the most nocturnal sleep problems, observed among the patients with poor quality sleep were: waking up in the middle of the night or too early in the morning (60%), needing to get up to go to the bathroom (51%) and others (49%), particularly pre-occupations. Interrupted sleep is common in this population, and was observed in 44% of the patients in another study⁽⁷⁾. Among the patients with good quality sleep, the most referred factors were getting up to go to the bathroom and feeling cold, but in a small proportion, affecting 11%.

With the purpose to investigate these aspects further, the sociodemographic characteristics of the patients were analyzed as a function of the quality of sleep.

An association was found between good quality sleep and having a partner. Sleep studies with HIV patients do not explore this aspect. However, considering that quality of sleep is related to quality of life, it is suggested that individuals who are well emotionally and psychologically have a better quality of sleep. Having a partner, despite the stigma and discrimination that still affect HIV/AIDS patients, could be decisive to improve their quality of life, with an indirect positive effect on the quality of sleep⁽¹⁹⁾.

One unexpected finding should be highlighted: a smaller percentage of patients who maintained the risk behavior experienced poor quality of sleep compared to those who did not maintain the behavior. Literature does not have any information in this respect. A careful speculation may be made, that these patients were probably less concerned with their disease, and this could reflect on their quality of sleep. The fact that a small percentage of patients maintained the risk behavior (15.6%) could also cause a bias in the statistical test.

Another contradictory finding was the greater proportion of patients with poor quality of sleep among those who did not take efavirenz compared to those who took this retroviral drug. Efavirenz has been pointed out as being harmful to the quality of sleep, changing its internal structure, reducing duration, increasing latency, and causing nightmares⁽²⁰⁾. Other authors have observed slight alterations on the sleep architecture, but not on its efficiency, and remembering dreams vividly. Nevertheless, patients reported being satisfied with their quality of sleep, suggesting changes that were more objective than subjective in nature⁽²¹⁾, which helps explain the study findings.

The largest proportion of patient with good quality of sleep was among those with an undetectable viral load. This may be directly related to the symptoms that emerge as the disease progresses, in addition to the preoccupations, anxiety and the need to manage symptoms. Other authors found an association between quality of sleep and HIV-related symptoms, pain, fatigue, depression, anxiety, and the number of adults living in the household, but not related to the viral load⁽⁸⁾. However, two other studies found an association between poor adherence to antiret-

roviral treatment and poor quality of sleep^(16,22). In one of those studies⁽²²⁾, 75% of the subjects with poor adherence reported experiencing sleep disturbances, compared to 45% of those with good adherence. The authors found that among the subjects with good adherence a high percentage of individuals had an undetectable viral load. These findings agree with the association between an undetectable viral load and good quality sleep, found in the present study.

It has been observed there is a relation between the progression of the disease and poor quality of sleep, and individuals with HIV/AIDS in an advanced stage of the disease can experience cerebral symptoms that increase sleep disturbances, such as insomnia^(8,20). This association was not observed in the present study, in which 51.3% of patients in stage C of the disease experienced good quality sleep. In this sense, the viral load obtained through laboratory exams should also be considered, as previously referred. It should also be noted that patients with poor quality of sleep in this stage of the disease accounted for an expressive proportion (48.7%), and their sleep quality should be habitually assessed. As the infection progresses, the immunological condition of HIV/AIDS patients worsens, and, thus, they may present physical symptoms such as pain, fever, coughing, dyspnea, nocturnal sweating, and diarrhea, which cause sleep disturbances and habit changes⁽⁸⁾.

Further studies should aim at clarifying the differences between people with HIV/AIDS who experience good and bad quality of sleep, performing a deeper investigation on the factors that have appeared as most relevant in other studies: anxiety, depression, fatigue, HIV-related symptoms, stress, and adherence to the antiretroviral treatment^(8,14, 22).

Special emphasis should be given to the significant association between good quality sleep and the undetectable viral load, which rises questions, with the due caution, about the relationships between the adherence to treatment and the quality of sleep, already referred in literature. These relationships should be investigated, considering that seeking good adherence to treatment is a challenge and a priority for nurses who treat individuals with HIV/AIDS.

CONCLUSION

In the present study, performed with 122 adults with HIV/AIDS, of both genders, it was observed a high prevalence (46.7%) of people with poor quality of sleep according to the Pittsburgh Sleep Quality Index (PSQI-BR). Although the sleep patterns did not appear to be expressively deteriorated in subjects with poor quality of sleep (a mean 6.4 hours of sleep, mean latency of 32 minutes and efficiency of 80%), these rates deserve the attention of healthcare professionals. Subjects with good quality sleep presented similar sleep patterns to those of healthy

adults (mean duration of eight hours, latency of less than fifteen minutes and efficiency of 95%). It was found that good quality of sleep was associated with having a partner and an undetectable viral load. Waking up in the middle of the night or too early in the morning, having to use the bathroom at night, having preoccupations and feeling cold were the main factors that disturbed nocturnal sleep.

Sleep complaints are prevalent among people with HIV/AIDS, but they apparently remain undervalued by

healthcare professionals. It is recommended that these professionals make a systematic inclusion of questions regarding sleep when assessing patients with HIV/AIDS. This way, it will be possible to make an early identification of the sleep-related complaints and plan interventions that avoid or minimize the worsening of the complaints and subsequent deterioration of the quality of sleep, which effects will eventually affect the patients' overall health and quality of life.

REFERENCES

1. Brasil. Ministério da Saúde; Departamento de DST, AIDS e Hepatites Virais. Dados epidemiológicos de DST, HIV/aids. Boletim Epidemiológico Aids [Internet]. 2010 dez. [citado 2011 abr. 20]. Disponível em: <http://www.aids.gov.br/publicacao/boletim-epidemiologico-2010>
2. Brasil. Ministério da Saúde; Secretária de Vigilância em Saúde. Programa Nacional de DST e Aids. Recomendações para terapia anti-retroviral em adultos infectados pelo HIV. 7ª ed. Brasília; 2008.
3. Marques MCC. Saúde e poder: a emergência política da Aids/HIV no Brasil. *Hist Ciênc Saúde Manguinhos*. 2002;9 Supl:41-65.
4. Bertolazi NA, Fagundes SC, Hoff LS, Pedro VD, Menna Barreto SS, Johns MW. Portuguese-language version of the Epworth sleepiness scale: validation for use in Brazil. *J Bras Pneumol*. 2009;35(9):877-83.
5. Junqueira P, Bellucci S, Rossini S, Reimão R. Women living with HIV/AIDS: sleep impairment, anxiety and depression symptoms. *Arq Neuro Psiquiatr*. 2008;66(4):817-20.
6. Phillips KD, Sowell R, Rojas M, Tavakoli A, Fulk LJ, Hand GA. Physiological and psychological correlates of Fatigue in HIV disease. *Biol Res Nurs*. 2004;6(1):59-74.
7. Marcos Sánchez F, Albo Castañón MI, Casallo Blanco S, Vizuete Calero A, Vivas del Val M, Herrero Domingo A. Estudio del sueño en pacientes con infección por el virus de la inmunodeficiencia humana. *An Med Interna (Madrid)*. 2008;4(25):197-8.
8. Robbins JL, Phillips KD, Dudgeon WD, Hand GA. Physiological and psychological correlates of sleep in HIV infection. *Clin Nurs Res*. 2004;13(1):3-5.
9. Muller MR, Guimarães SS. Impacto dos transtornos do sono sobre o funcionamento diário e a qualidade de vida. *Estud Psicol (Campinas)*. 2007;24(4):519-28.
10. Correa K, Ceolim MF. Qualidade do sono em pacientes idosos com patologias vasculares periféricas. *Rev Esc Enferm USP*. 2008;42(1):12-8.
11. Bastos FI, Szwarcwald CL. AIDS e pauperização: princípios conceituais e evidências empíricas. *Cad Saúde Pública*. 2000;16 Supl.1:65-76.
12. Fonseca MG, Bastos FI, Derrico M, Andrade CLT, Travassos C, Szwarcwald CL. AIDS e grau de escolaridade no Brasil: evolução temporal de 1986 a 1996. *Cad Saúde Pública*. 2000;16 Supl 1:77-87.
13. Boletim Epidemiológico AIDS e DST. Brasília: Ministério da Saúde [Internet]. 2008 [citado 2010 abr. 25];5(1). Disponível em: http://www.aids.gov.br/sites/default/files/Boletim2008_versao1_6.pdf
14. Salahuddin N, Barroso J, Leserman J, Harmon JL, Pence BW. Daytime sleepiness, nighttime sleep quality, stressful life events, and HIV-related fatigue. *J Assoc Nurses AIDS Care*. 2009;20(1):6-13.
15. Cruess DG, Antoni MH, Gonzalez J, Fletcher MA, Klimas N, Duran R, et al. Sleep disturbance mediates the association between psychological distress and immune status among HIV-positive men and women on combination antiretroviral therapy. *J Psychosom Res*. 2003;54(3):185-9.
16. Phillips KD, Moneyham L, Murdaugh C, Boyd MR, Tavakoli A, Jackson K, et al. Sleep disturbance and depression as barriers to adherence. *Clin Nurs Res*. 2005;14(3):273-93.
17. Nokes KM, Kendrew J. Sleep quality in people with HIV disease. *J Assoc Nurses AIDS Care*. 1996;7(3):43-50.
18. Nokes KM, Kendrew J. Correlates of sleep quality in persons with HIV disease. *J Assoc Nurses AIDS Care*. 2001;12(1):17-22.
19. Santos ECM, França Junior I, Lopes F. Qualidade de vida de pessoas vivendo com HIV/Aids em São Paulo. *Rev Saúde Pública*. 2007;41 Supl 2:64-71.
20. Reid S, McGrath L. HIV/AIDS. *Sleep Med Clin*. 2007;2(1):51-8.
21. Moyle G, Fletcher C, Brown H, Mandalia S, Gazzard B. Changes in sleep quality and brain wave patterns following initiation of an efavirenz-containing triple antiretroviral regimen. *HIV Med*. 2006;7(4):243-7.
22. Gay C, Portillo CJ, Kelly R, Coggins T, Davis H, Aouizerat BE, et al. Self-reported medication adherence and symptom experience in adults with HIV. *J Assoc Nurses AIDS Care*. 2011;22(4):257-68.