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Short Communication

Lifestyle and sleep patterns among people living with and without HIV/AIDS

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Abstract

Introduction: Negative lifestyles affect the health and quality of sleep of those living with and without HIV/AIDS. **Methods:** Individuals were divided into two groups based on whether or not they were living with HIV/AIDS. **Results:** Among the 20 participants, 95% displayed a poor lifestyle, and both groups demonstrated low-quality sleep with significant differences between groups in the early sleep variables, total sleep time, and sleep patterns. **Conclusions:** Both groups demonstrated similar behavior with unsatisfactory lifestyles, poor sleep quality, and irregular sleep patterns.

Keywords: Physical activity. Lifestyle. Sleep. HIV.

A chronic disease, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) has negative impacts owing to several aspects intrinsic to the syndrome, and the antiretroviral drugs used to treat it cause adverse events of their own. In the asymptomatic phase of infection, poor sleep quality causes psychophysiological damage and disturbances that directly interfere with the health of individuals, causing insomnia, daytime sleepiness, and a decrease in the performance of daily activities[1].

It is estimated that 75% of adults living with HIV/AIDS have poor sleep quality and consequent sleep disorders. However, low-quality sleep is also prevalent in 40% of the population without HIV/AIDS, demonstrating that this occurrence is not only related to infection but is becoming an important public health problem[2].

Lifetime behaviors are related to health, such that lifestyle is presented as a series of habits and customs influenced by the process of socialization and communication. These have implications for health and are often subjects of epidemiological investigation[3]. In addition to being consequences of HIV/AIDS, physical inactivity, unsatisfactory lifestyles, and irregularity in sleep patterns are prevalent among those without the infection, making it necessary to investigate their causes[4].

Based on the above, this cross-sectional descriptive study aims to investigate the living and sleep patterns of 20 individuals of both sexes living with and without HIV/AIDS, who were divided into the following two groups according to the International Physical Activity Questionnaire version validated by the World Health Organization[4]:

- **Group A:** 10 sedentary people living with HIV/AIDS (PLWHA).
- **Group B:** 10 sedentary people living without HIV/AIDS.

Ethical considerations

The research protocol was based on the policy proposed in Resolution 466/12 and was approved by the Ethics Committee of the State University of Rio Grande do Norte (UERN-Brazil), n. 856,478.

The Individual Lifestyle Profile questionnaire was adapted for People Living with HIV/AIDS (PLWHA)[5,6]. To evaluate the subjective quality of sleep, the validated Pittsburgh Sleep Quality Index questionnaire was used[7]. To evaluate the sleep-wake cycle, an Act Trust [(CAT); Condor Instruments] wristwatch was used for 10 consecutive days, and participants received a pamphlet with instructions on how to use the device and a sleep diary.

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The data were described as frequencies and percentages for categorical variables and by way of central tendency (mean or median) and dispersion measures [standard deviation (SD)] or percentiles) for numerical variables. The Shapiro-Wilk test was conducted. Continuous variables were compared using the unpaired t-test (normal distribution) or the Mann-Whitney U test (asymmetric distribution) and frequencies were compared using Fisher's exact test, where appropriate. For all tests, the statistical significance level was set at 5%.

The characteristics of the groups and their lifestyle domains are analyzed in **Table 1**.

When analyzing the means of the body mass index of each group, a prevalence of overweight individuals was observed. There were significant differences in the preventive behavior domain (*p-value*<0.01) between the groups A and B. **Table 2** shows the subjective sleep quality of each group, presenting a significant difference, showing that both groups demonstrated poor sleep quality.

Table 3 provides the results of the objective data regarding the subjective quality of sleep obtained through the actigraph.

Thus, we observed a statistically significant difference between the time total to sleep and waking between group A and group B. However, when we analyzed the real time of sleep (actual time spent sleeping), group A presented data worth less than six hours (<6hrs) of sleep per day.

In group B, sleep time, total sleep time, and sleep efficiency were higher than in group A; however, the sleep latency and number of awakenings at night were also higher. Thus, the data might have been influenced by the prevalence and occurrence of poor sleep quality, since latency and number of awakenings may influence the onset of sleep disturbances.

The groups presented similar results – being overweight, low quality of life, and consequently poor sleep quality – llowing irregular sleep patterns. Regarding sedentary individuals, the results may be related to inactivity, since a sedentary lifestyle is an agent that damages health, allowing the development or worsening of chronic diseases such as cardiovascular, neurological, and psychological conditions. Based on this, it is necessary to adopt habits that can be considered non-pharmacological treatment for people with and without HIV/AIDS[8].

Both groups demonstrated poor sleep quality; however, the results of the group composed of sedentary individuals with HIV/AIDS were worse. The literature highlights a higher prevalence of poor sleep quality in PLWHA, associating this occurrence with the characteristics of the infection, where, in the initial phase, the virus attacks the central nervous system. Poor sleep quality may influence the onset of sleep disorders, such as insomnia and depression, associating this factor with the use of antiretroviral drugs and low cluster of differentiation 4 (CD4) counts, directly influencing the immune system[9].

Studies have found that the shorter the time spent engaging in physical activity, the greater the chances of poor sleep quality: PLWHA participating in an intervention with cardiovascular and resistance training demonstrated better results in relation to sleep quality and a 64% reduction in the number of nocturnal excitations[10].

The results show that physical activity is beneficial for sleep quality, confirming hypotheses such as the fact that thermoregulation (increased body temperature. which facilitates sleep induction) and energy conservation (the increase in calorie production promoted following physical activity increases the need for sleep) help achieve a positive energy balance, establishing a conducive condition for sleep/the sleep cycle[11].

When analyzing sleep patterns through the actigram, the groups presented irregularities such as: total sleep time was short, the greater the sleep latency and the number of awakenings were identified. Our results corroborate findings that show that individuals who present reduction in total sleep time and low sleep efficiency are consequently detected with insomnia symptoms[11,12].

Thus, studies have shown that significant improvements in total sleep time, sleep efficiency, reductions in the mean number of awakenings and in sleep disturbances through interventions for PLWHA, including physical activity, present

TABLE 1: Characteristics and lifestyle profile of both groups.

Characteristics	Group A	Group B	*p-value*
Age (years)*	40.90 (10.09)	31.90 (10.49)	
Body mass index (kg/m^2)*	26.02 (4.50)	27.20 (5.14)	0.59[a]
Eating habits**	4.50 (0.75–6.00)	3.00 (2.00–4.00)	0.48[b]
Physical activity**	0.00 (0.00–4.00)	2.00 (1.00–4.25)	0.15[b]
Preventive behaviors **	9.00 (6.75–9.00)	4.00 (3.00–5.25)	**<0.01[b]**
Relationship**	6.00 (5.75–9.00)	5.50 (4.50–7.00)	0.21[b]
Stress control**	5.00 (3.00–7.00)	4.50 (2.50–6.00)	0.67[b]
PEVI**	25.50 (18.00–29.00)	20.00 (15.50–23.00)	0.56[a]

SD: standard deviation; **PEVI:** *perfil do estilo de vida individual*. [a]Unpaired t test. [b]Mann Whitney U test. *mean (SD).**median (25th–75th percentiles).

TABLE 2: Comparison of components of the Pittsburg sleep quality index.

	Group A	Group B	*p-value*
Components of the PSQI	**n (%)**	**n (%)**	
Subjective sleep quality			
very good	0 (0.0)	0 (0.0)	
good	6 (60.0)	8 (80.0)	0.66*
bad	2 (20.0)	1 (10.0)	
very bad	2 (20.0)	1 (10.0)	
Sleep latency (min)			
< 15	3 (30.0)	3 (30.0)	
16–30	4 (40.0)	2 (20.0)	0.62*
31–60	3 (30.0)	3 (20.0)	
>60	0 (0.0)	2 (20.0)	
Sleep duration (h)			
>7	2 (20.0)	3 (30.0)	
6 a 7	5 (50.0)	6 (60.0)	
5 a 6	2 (20.0)	1 (10.0)	1.00*
< 5	1 (10.0)	0 (0.0)	
Habitual sleep efficiency (%)			
> 85%	0 (0.0)	2 (20.0)	
75–85%	7 (70.0)	3 (30.0)	
65–74%	3 (30.0)	5 (50.0)	
< 65%	0 (0.0)	0 (0.0)	
Sleep disturbances			
none	0 (0.0)	0 (0.0)	
1–9	5 (50.0)	6 (60.0)	1.00*
10–18	5 (50.0)	4 (40.0)	
19–27	0 (0.0)	0 (0.0)	
Use of sleeping medication			
no	9 (90.0)	10 (100.0)	
less than once	0 (0.0)	0 (0.0)	
once or twice	1 (10.0)	0 (0.0)	1.00*
two or three times	0 (0.0)	0 (0.0)	
Daytime dysfunction			
never	2 (20.0)	2 (20.0)	
only a slight problem	5 (50.0)	4 (40.0)	1.00*
somewhat of a problem	1 (10.0)	1 (10.0)	
a very big problem	2 (20.0)	3 (30.0)	
Classification of subjective sleep quality			
good	1 (10.0)	3 (30.0)	
bad	8 (80.0)	4 (40.0)	0.24*
presence of sleep disturbance	1 (10.0)	3 (30.0)	

PSQI: Pittsburg sleep quality index; **min:** minutes; **h:** hours. *Fisher's exact test.

TABLE 3: Objective characterization of sleep patterns and comparisons between groups.

Sleep patterns	Group A	Group B	*p-value*
Bedtime*	22h45min (01h03min)	23h40min (45min)	**<0.01**[a]
Time to wake up*	6h13min (01h28min)	7h05min (43min)	**0.02**[a]
Time in bed (min)*	389.53(89.09)	442.47 (45.97)	0.11[a]
TTS (min)*	315.44 (103.21)	368.91 (52.41)	0.16[a]
Sleep latency (min)**	4.50 (2.52–9.32)	5.00 (2.57–7.47)	0.94[b]
Sleep efficiency (%)**	80.33 (71.30–84.40)	84.56 (77.51–86.39)	0.22[b]
WASO (min)*	63.98 (16.22)	63.07 (17.88)	0.90[a]
Awakenings (n)*	4.80 (0.76)	5.85 (1.35)	**0.04**[a]

min: minutes; **h:** hours**; TTS:** total time of sleep; **WASO**: wake after sleep onset; **n**: numbers of awakenings during sleep; **SD:** standard deviation. [a]Unpaired t test. [b]Mann Whitney U test. *mean (SD). **median (25^{th}–75^{th} percentiles).

positive results to improve quality of life of those involved, since lack of physical activity may contribute to the occurrence of these problems and, consequently, to the development of sleep disorders[13].

According to the literature, irregular patterns of sleep and physical inactivity have repercussions such as cognitive malfunction, changes in propensity for metabolism, psychological disturbances, shorter life expectancy, and premature aging[14]. After an objective evaluation, it can be understood that the adoption of unsatisfactory habits and lifestyles can cause problems in relation to the quality and pattern of sleep and, consequently, the health and quality of life. Studies show that physical activity is a component of good sleep hygiene associated with increased duration and quality, and reduced latency and arousal. It should be noted that humans require regularity in sleep patterns because of important biological functions related to memory consolidation, energy restoration, and brain energy metabolism[15].

It can be concluded that there is no difference between the groups evaluated since all participants behaved in a similar way. The lifestyles were unsatisfactory, with the domains of eating habits and physical activity presenting the greatest deficits. In addition, the quality of sleep was inadequate and there were irregularities in sleep patterns. These data are worrying, as they demonstrate that the health of people who are not infected with the HIV virus is as much a cause of worry as of those living with HIV. Based on these alarming results, it is necessary to encourage the promotion of health in society, in order to reduce sedentary lifestyle, encourage changes in eating habits, and change behavioral habits to enhance sleep quality.

Through this study, it is possible to propose the development of studies in which the use of medication is strictly controlled, and which have larger samples. In addition, there is a need to implement interventions designed to help improve sleep hygiene and to implement and encourage participation in physical activity programs.

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Conflict of interest

The authors declare that there is no conflict of interest.

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