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Illness duration and quality of sleep among people living with HIV: a cross-sectional study

Ahmad Ikhlasul Amal,^{1,2} Tintin Sukartini,¹ Ninuk Dian Kurniawati,¹ Indah Sri

Wahyuningsih,^{1,2} Suyanto,^{1,2} Inayatul Ulya²

¹Faculty of Nursing, Universitas Airlangga, Surabaya; ²Faculty of Nursing, Universitas Islam Sultan Agung, Semarang, Indonesia

Correspondence: Ahmad Ikhlasul Amal, Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia.

e-mail: ahmad.ikhlasul.amal-2020@fkip.unair.ac.id

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Abstract

HIV is a chronic condition that requires ongoing medical management, and sleep disturbances are common among individuals living with the virus. By examining the relationship between the duration of illness and sleep quality, healthcare professionals can gain insights into the unique challenges faced by HIV patients and develop targeted interventions to address their specific sleep-related needs. This study aims to find out the relationship between the illness duration and the quality of sleep among people living with

HIV/AIDS. This research used an observational research design using a cross-sectional approach. 128 HIV patients on Balai Kesehatan Masyarakat Wilayah Semarang were involved in using purposive sampling techniques. The data was gathered with medical records and the Pittsburgh Sleep Quality Index (PSQI). Spearman rank correlations were used to analyze the data. This study has been declared ethically appropriate by the Health Research Ethics Committee faculty of Nursing Universitas Islam Sultan Agung. The results found a relationship between the illness duration and quality of sleep where a p-value of $0.019 < \alpha$ (0.05) with a contingency coefficient value of 0.208. The length of diagnosis and sleep quality have a strong correlation. Nurses and other healthcare providers need to provide interventions for PLHIV to improve sleep quality.

Introduction

Human Immunodeficiency Virus (HIV) is the main cause of acquired Immunodeficiency Syndrome (AIDS).¹ HIV infection can cause various signs and health issues, which include sleep disturbances and prolonged length of infection.^{2,3} Previous studies have proven that individuals residing with HIV regularly enjoy complicated intellectual and physical health challenges, that could affect their sleep quality.⁴

Duration of infection is a high-quality element of the lived experience of people with HIV.⁵ Numerous fitness headaches, which consist of opportunistic infections and facet outcomes of antiretroviral remedies, can result in prolonged intervals of contamination. In turn, the stepped-forward period of infection can affect sleep nicely, resulting in sleep disturbances and diverse other sleep troubles.³

HIV patients regularly experience complicated sleep disturbances, prompted by way of a range of things regarding bodily, psychological, and remedy elements. One of the important causes of sleep disturbances in HIV sufferers is the presence of bodily symptoms which could appear because the infection progresses.^{3,6} Opportunistic infections and fevers regularly associated with HIV situations can disrupt sleep patterns and cause terrible sleep. using antiretroviral (ARV) drugs, while essential for controlling infection, can also cause aspect outcomes including insomnia or modifications in sleep styles.^{7,8} psychological factors, including social stigma, melancholy, and pressure, can play a sizable role in disrupting the sleep of HIV patients. Similarly, neurological disorders because of HIV may additionally contribute to sleep pain. persistent pain from conditions together with peripheral neuropathy can also be a cause for sleep disturbances. Hormonal modifications, weight reduction, lifestyle adjustments, and restrained physical interest can also have an effect on sleep in HIV sufferers. consequently, an in-depth know-how of the complicated interactions between these factors is required to design a holistic technique for sleep problem management in people residing with HIV.⁹

Poor sleep quality in people living with HIV (PLHIV) not only negatively affects physical health but also cognitive function and general quality of life.¹⁰ Sleep disruptions can increase indicators of intellectual fitness, such as tension and hopelessness, and reduce patience and stress levels.¹¹

Nurses play a significant role in analyzing the relationship between illness duration and sleep quality in HIV patients. In nursing care, nurses can play a proactive role in monitoring and recording patients' duration of illness and paying attention to their sleep patterns.¹² By making careful observations, nurses can identify physical symptoms that may be the cause of longer duration of illness in HIV patients, such as opportunistic infections or side effects of antiretroviral drugs.^{4,13} In addition, nurses can use good communication skills to interact with

patients, listen to their complaints regarding sleep quality, and identify psychological factors that may affect sleep, such as stress or anxiety.¹⁴ Through their role in analyzing the relationship between illness duration and sleep quality, nurses not only contribute to a better understanding of the complexity of HIV patients' conditions but also play an essential role in improving patients' quality of life through a holistic and evidence-based approach to care.¹⁵ Unfortunately, not many researchers have mainly looked into the relationship between the length of an infection and the quality of sleep in HIV-positive populations. To close this knowledge gap, this study aims to determine and understand the length of the disease phase in individuals living with HIV and its correlation with sleep quality.

Materials and Methods

Research design

This study used a cross-sectional design.

Study participants

Data were collected at Kedungmundu and Poncol Public Health Center, Semarang, Central Java, Indonesia. Sampling in this study was carried out using a purposive sampling technique for as many as 128 respondents with inclusion criteria of patients willing to become respondents and patients who could read and write. Exclusion criteria: patients referred to the hospital or not undergoing ARV therapy, patients who are not cooperative, and patients who have cognitive impairment. Informed consent was obtained from all participants and their families before data collection.

Variable, instrument, and data collection

The independent variable in this study was the illness duration, while the dependent variable was the quality of sleep. Respondent characteristics, including age, gender, education, and occupation were also collected. The participants were cardiovascular patients undergoing treatment at the hospital. This study used an instrument in the form of a Pittsburgh Sleep Quality Index (PSQI) and secondary data from medical record data to determine the illness duration of being diagnosed with HIV/AIDS.

Data analysis

Data analysis was univariately using the frequency distribution table for each variable in the study, both dependent and independent variables. After that, a bivariate analysis was carried out to see the relationship between dependent and independent variables using the Spearman test with a significance value of 5%. Data analysis was conducted using SPSS software.

Results

Univariate analysis of participants demographic and variable

The average age of respondents was 39.23 years, while the youngest age range was 21 years, and the oldest age was 74 years. The frequency distribution of the sexes of most respondents was male, with a total of 84 people (65.6%). The distribution of the education frequency of most respondents is senior high school education, with a total of 62 (48.4%). The distribution of the frequency of work of most respondents is working with a total of 93 (72.7%). The average frequency distribution for being diagnosed with HIV (illness duration) is six years (standard deviation ± 3.506), while the length of time being diagnosed with HIV is one year, and the longest is 21 years. The frequency of sleep quality distribution shows that the dominant respondents have poor sleep quality, as many as 81 (63.3%) (Table 1).

Relationship between illness duration and quality of sleep

This study's results obtained a sig value of 0.019 ($p < 0.05$), which means that the correlation or relationship between the illness duration and the quality of sleep among PLHIV is significant. The correlation value of 0.208 indicates that the direction of the correlation is positive with a weak correlation (Table 2).

Discussion

Respondents based on age obtained an average age of 39 years. This result aligns with other studies where respondents are more in the age group of 31-40 years.¹⁶ Another study explained that most HIV infections occur at a young to old age (36-65 years). It can occur because, in old age, most likely, they do not feel any satisfaction in dealing with their partners, so having unsafe sex. However, in some other cases, young age in sexual relations can also be at risk.¹⁷

Respondents based on gender obtained more men. This finding is in line with other studies in which male respondents are more infected with HIV. It is estimated that more than 3 million Indonesian men are prostitute customers. The results of another study stated that the male sex was more prone to contracting HIV/AIDS; this was caused by the use of syringes that were free from tattooing with non-sterile tools or even injecting drugs.¹⁸

Based on the results, the educational characteristics of PLHIV are more dominant in high school. This finding aligns with other studies where the status of high school education is more due to the low public understanding of HIV.¹⁶ The results of other studies identified that the majority of the education was senior high school.¹⁹ Researchers assume that people with lower levels of education will be more at risk because in the absence of knowledge about HIV/AIDS, how to avoid contracting HIV, and how to have safe sex, they will be at greater

risk for HIV infection. Another study explained that PLHIV who had low education and did not have sufficient knowledge about HIV/AIDS were 5.3 times more at risk of preventing and transmitting HIV.¹⁷

The results of the characteristics of PLHIV respondents predominantly have jobs. This finding is in line with other studies that explain that a bad economy, even though they are already working, can lead people into dangerous sexual risk behaviors to meet the needs of life both for themselves and others.¹⁶ From some of these statements, the researcher assumes that someone who works but has a low income to meet the needs of life will be encouraged to have other jobs that are at risk of being infected with HIV.

The study results on illness duration showed that more respondents were exposed to HIV with a minimum of 1 year and a maximum of 21 years. The most dominant were respondents who had been exposed six years ago. This result is comparable to other studies, which suggest that most PLHIV have been infected for more than three years.¹⁹ The results of other studies explain that the emergence of new cases is not representative of all cases because it is possible that the exposed person is not in the window phase but has been infected with HIV for a long time.¹⁷

The study results on sleep quality found that most respondents had poor sleep quality. This finding aligns with the results of other studies that the quality of sleep in PLHIV is identified as a poor category.²⁰ The results of other studies explain that a person's sleep can be disturbed when he contracts a disease, and people infected with HIV have sleep disorders between 40 and 70%.²¹ Another research also found that the condition of patients in terms of their illness and treatment affects their sleep quality. From some of these statements, researchers assume that the sleep quality in PLHIV tends to be poor. This result is caused by the course of the disease that results in changes in the physical and mental health of PLHIV, which will cause disturbances in sleep and impact sleep quality.

The results of this study are in line with research conducted by, who explained that PLHIV had poor sleep quality; this was caused by the side effects of the ARV drugs they were taking. Other studies state that ARV drugs have side effects, including fatigue, dizziness, joint pain, stomach pain, and even diarrhea. These side effects will decrease health status, productivity, and especially sleep quality.²² Researchers assume that the side effects of ARV drugs are related to the duration of being diagnosed with HIV. The longer a person has been diagnosed with HIV and undergoing therapy, the more likely it is that adherence to taking ARVs will be higher, which means that taking ARV drugs will result in higher levels of adherence to ARV drugs.²³ The greater the number of PLHIV experiencing side effects of drugs that affect their health status, the higher the quality of sleep PLHIV becomes.

Poor sleep quality is a prevalent issue among people living with HIV (PLHIV) in low- and middle-income countries (LMICs) such as Indonesia. Various factors contribute to this phenomenon, including socioeconomic status, with individuals below the poverty line being more likely to experience poor sleep quality.²⁴ Additionally, PLHIV faces unique challenges such as social stigma and discrimination, which can lead to heightened levels of stress and anxiety, further impacting sleep quality.²⁴ Moreover, the exact cause of sleep disturbances in PLHIV is not fully understood, but it is recognized as an important health problem that requires attention and intervention.⁹

Poor sleep quality among people living with HIV (PLHIV) in low- and middle-income countries (LMICs) is a significant concern, often assessed using tools like the Pittsburgh Sleep Quality Index (PSQI). Studies have highlighted the prevalence of poor sleep quality among PLHIV in LMICs, with factors such as social stigma, comorbidities, and psychological distress contributing to sleep disturbances.²⁵ The PSQI is a widely utilized instrument to assess sleep quality comprehensively, encompassing various domains including sleep latency, duration, efficiency, disturbances, and daytime dysfunction. Its application in

LMICs allows for the identification of specific sleep-related issues faced by PLHIV in these regions, aiding in targeted interventions and improving overall health outcomes.²⁶

The strength of the correlation in this study is weak, meaning that poor sleep quality in PLHIV is not only influenced by the duration of being diagnosed with HIV but can be influenced by other factors that can affect sleep quality in PLHIV. The direction of the positive correlation indicates that the variables are in the same direction, *i.e.*, the longer it takes to be diagnosed with HIV/AIDS, the poorer the quality of sleep in PLHIV.

The relationship between illness duration and sleep quality among people living with HIV (PLHIV) is multifaceted and influenced by various factors. Firstly, as the duration of HIV infection progresses, individuals may experience a decline in physical health, including the manifestation of comorbid conditions such as chronic pain and inflammation, which can disrupt sleep patterns and lead to poor sleep quality.²⁷ Additionally, the chronic nature of HIV requires ongoing medical management, often involving antiretroviral therapy (ART). Side effects of ART medications, such as insomnia or vivid dreams, can contribute to sleep disturbances, particularly as treatment duration increases.²⁸

Another opinion explains that someone diagnosed for a long time will experience a specific change from HIV itself to cause a series of symptoms of the disease that reduce the physical and mental health status of PLHIV. That symptom causes people living with HIV to experience tremendous pressure from themselves, which leads to excessive emotional reactions, prolonged feelings of sadness, and a trigger for stressors.^{29,30} From these several factors, if the mental health of PLHIV is disturbed, excessive anxiety and side effects of ARV drugs are consumed, it can cause the sleep quality of PLHIV to be poor.²⁰

This study has certain limitations related to confounding variables and bidirectional causality. Because many studies are cross-sectional, establishing a clear cause-effect relationship becomes challenging. Factors like comorbidities, medication regimens, socioeconomic status,

and psychological factors may influence the duration of illness and sleep quality independently, making it difficult to determine the exact impact of illness duration on sleep quality. Longitudinal studies with larger sample sizes and comprehensive control of confounding variables are necessary to understand better the complex interplay between illness duration and sleep quality in PLHIV. Additionally, qualitative research methods could provide deeper insights into the subjective experiences and perceptions of individuals living with HIV regarding their sleep patterns and illness duration. Such qualitative research could complement quantitative findings and improve our understanding of this relationship.

Conclusions

This study revealed a connection between the length of an illness and the level of sleep that HIV-positive individuals get. Due to a variety of intricate and different elements, such as individual differences in HIV symptoms, the impact of medication side effects, and the involvement of psychosocial variables that influence sleep patterns, it was discovered that there was little correlation between the length of illness and the quality of sleep in HIV patients. However, given a better understanding of the correlation between the length of an illness and sleep quality in this population, nurses have a crucial role to play in creating and implementing care strategies that center on managing physical and psychosocial symptoms as well as teaching HIV patients how to improve the quality of their sleep.

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Table 1. Participants' demographic and variable description (n=128).

| Variable | Mean±SD | Median | Minimum-Maximum |
|------------------|---------------------|------------------|------------------------|
| Age | 39.23±10.16 | 37.00 | 21-74 |
| | Variable | Frequency | Percentage |
| Gender | Male | 84 | 65.6 |
| | Female | 44 | 34.4 |
| | Total | 128 | 100,0 |
| | Variable | Frequency | Percentage |
| Education | Primary School | 7 | 5.5 |
| | Junior High School | 32 | 25.5 |
| | Senior High School | 62 | 48.4 |
| | Vocational School | 7 | 5.5 |
| | Undergraduate Study | 20 | 15.6 |
| | Total | 128 | 100.0 |
| | Variable | Frequency | Percentage |
| Job | Jobless | 35 | 27.3 |
| | Work | 93 | 72.7 |
| | Total | 128 | 100,0 |
| | Mean±SD | Median | Minimum-Maximum |
| Illness Duration | 6.12±3.506 | 6.00 | 1-21 |
| | Variable | Frequency | Percentage |
| Sleep Quality | Good | 47 | 36.7 |
| | Poor | 81 | 63.3 |
| | Total | 128 | 100.0 |

Table 2. Relationship between illness duration and quality of sleep (n=128).

| | Quality of sleep |
|---------------------------|-------------------------|
| Illness duration r | 0.208 |
| p-value | 0.019 |
| n | 128 |