

Sleep Quality in Patients with Human Immunodeficiency Virus

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ARTICLE INFO

Article history

Received date
25 Jan 2024

Revised date
11 Mar 2024

Accepted date
20 Mar 2024

Keywords:

HIV/AIDS;
Health problems;
Pittsburgh Sleep Quality
Index.

ABSTRACT

Human Immunodeficiency Virus (HIV) is a viral infection that occurs in the human immune system and makes the body unable to fight infection because the virus can replicate itself. The physical and psychological problems experienced by HIV patients can change their sleep patterns and quality. Poor sleep quality will cause various health problems, including a decreased immune system. HIV patients have experienced a decrease in their immune system due to viral infection, so they need good quality sleep so as not to disrupt their condition and health status. This research was conducted to determine the quality of sleep of HIV patients at Sumedang Hospital. This research method is descriptive and quantitative, with 74 HIV patients taken using consecutive sampling techniques. The sleep quality assessment instrument uses the Pittsburgh Sleep Quality Index (PSQI). Univariate analysis was used in this study to describe the distribution of frequencies and percentages of respondent characteristics and sleep quality. The results of this study showed that the majority of HIV patients experienced poor sleep quality (63.5%). Poor sleep quality that occurs in HIV patients is related to various factors such as psychological stress, disease, medication, age, and gender. From these findings, efforts, and interventions are needed for nurses or health service providers to improve the sleep quality of HIV patients.

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INTRODUCTION

Human Immunodeficiency Virus (HIV) is an infection that targets the human immune system, including primary infection with or without the occurrence of acute syndrome, asymptomatic stage, or advanced stage. The final stage of the course of HIV disease is Acquired Immunodeficiency Syndrome (AIDS), which is a set of symptoms due to damage to the immune system due to infection with HIV (Hidayati, 2020). The HIV/AIDS epidemic continues to grow rapidly over time despite various efforts to stop its spread (Setiarto et al., 2021).

HIV has become a global health problem after claiming 40.4 million lives around the world. At the end of 2022, there will be 39 million people living with HIV (World Health Organization, 2023). In 2022, there will be 52,995 HIV cases in Indonesia, with 80.4% of them having received ARV treatment (Ministry of Health RI, 2022). The total number of HIV cases in Indonesia until September 2022 reached

351,109 cases. West Java ranked third, with HIV cases reaching 57,343 cases. Sumedang Regency is one of the regencies in West Java, with 129 cases of HIV detected in 2023. Meanwhile, the total number of people living with HIV/AIDS in November 2023 undergoing treatment support treatment reached 881 people (Sumedang Regency Health Office, 2023).

Bare and Smeltzer (2005) stated that apart from causing physical problems, HIV/AIDS can also cause social and psychological problems. HIV patients can experience changes in sleep patterns and quality due to this problem. Sleep quality is a person's satisfaction with his sleep, not experiencing feelings of fatigue, anxiety, lethargy, apathy, blackness in the eye area, headaches, swollen eyelids, yawning, and drowsiness (Hidayat in Wicaksono, 2013). The seven elements of sleep quality include subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction (Buysse et al., 1989). Several factors can affect

sleep quality, namely illness, environment, lifestyle, psychological stress, alcohol, diet, smoking, motivation, and medication (Berman & Fradsen, 2016). Other factors, such as age and gender, can also affect a person's sleep quality (Nguyen et al., 2019; Nowakowski et al., 2013). Poor sleep quality in HIV/AIDS patients occurs when rest and sleep patterns are disturbed due to these factors.

The results of research conducted at Dr. Soedirman Kebumen Hospital found that 60% of 80 PLHIV (People Living with HIV) had poor sleep quality (Agustin et al., 2021). In line with research conducted in Jember, 70% of 100 PLHIV patients experience poor sleep quality. According to Aliyah et al. (2019), the poor sleep quality of PLHIV is related to mental health, anxiety, and ARV (antiretroviral) consumption. ARV drugs are indeed effective in controlling the virus, reducing symptoms, and preventing the progression of HIV into AIDS. However, there are significant challenges for HIV/AIDS patients while taking ARVs in the form of side effects that arise, such as nausea, vomiting, diarrhea, constipation, headaches, vision problems, smell, anxiety, anemia, insomnia, and nightmares (Tadesse et al., 2014). Side effects of ARVs can appear within weeks or months but can be reduced if patients are adherent to treatment by taking ARVs regularly (Sitorus et al., 2021). Poor sleep quality in HIV/AIDS patients is also influenced by feelings of depression experienced by a person after diagnosis. This depression causes sleep frequency disturbances such as difficulty initiating sleep and waking up at night (Agustin et al., 2021).

Poor sleep quality, if not treated, can cause health problems. The negative impact of poor sleep quality in the form of unfocus, unproductive, inability to make decisions, forgetfulness, anger, and depression can even increase the risk of death and decreased immune system (Suratih et al., 2020). In HIV patients, the immune system continues to decline due to viral infections. A continuously declining immune system can accelerate HIV patients to enter the AIDS stage (Setiarto et al., 2021). Poor sleep quality in HIV patients is related to physical and psychological problems that occur during the course of the disease. HIV patients need to experience good sleep quality so that their condition and health status do not deteriorate. Therefore, further research is needed on sleep quality in HIV patients. This can form the basis of research and can be utilized by healthcare providers to improve treatment programs through various interventions to improve sleep quality in

HIV patients. The purpose of this study was to assess the quality of sleep among HIV patients at Sumedang Regional General Hospital.

METHOD

The method used in this research is quantitative descriptive. The population in this study was HIV patients undergoing outpatient treatment at Sumedang Hospital. The sampling technique uses consecutive sampling, and samples are taken according to inclusion and exclusion criteria. The inclusion criteria used in this study were HIV patients aged more than 10 years with female and male genders. Then the exclusion criteria for this study are HIV patients who have communication disorders, physical limitations, and psychological disorders. The sample obtained in this study was 74 HIV patients.

Data was collected through interviews using the Pittsburgh Sleep Quality Index (PSQI) instrument. This instrument is declared reliable because it has a Cronbach's Alpha value of 0.81 and is valid. After all, it has a Content Validity Index for Scale (S-CVI) value of 0.83 (Agustin et al., 2021). Univariate analysis was used to describe the frequency distribution and percentage of sleep quality of HIV patients categorized into good and poor sleep quality. Data is processed using a computer program. The Research Ethics Committee of Universitas 'Aisyiyah Bandung has granted ethical approval for this study under reference number 664/KEP.01/UNISA-BANDUNG/VII/2023.

RESULTS

Based on Table 1 above, the age of respondents has a median value of 30.50 with an interquartile range of 15. As many as 77% of respondents were in the adult age group aged 19-44 years. After that, it was followed by the pre-elderly group (45-59 years) with a percentage of 20.3%. In addition, most respondents were male (67.6%) and Sundanese (94.6%). Most respondents have Senior High School with a percentage of 60.8%, and most jobs are self-employed with a percentage of 43.2%. Most respondents are single, with a percentage of 52.7%, and almost all respondents consume ARVs (97.3%).

Table 1. Characteristics of HIV patients

Characteristics of Respondents	n	%
Age (Median) (IQR)	30.5	15
Age group		
Adolescent (10 – 18)	2	2.7
Adult (19 – 44)	57	77
Pre-Elderly (45 – 59)	15	20.3
Sex		
Male	50	67.6
Female	24	32.4
Ethnic Group		
Sundanese	70	94.6
Javanese	4	5.4
Education		
Elementary School	5	6.8
Junior High School	17	23
Senior High School	45	60.8
Diploma (D1/D2/D3)	2	2.7
Bachelor's (S1/S2/S3)	5	6.8
Occupation		
Student	3	4.1
Housewives	20	27
PNS	1	1.4
Self-Employed	32	43.2
TNI / Police	1	1.4
Unemployed	10	13.5
Everything else	7	9.5
Marital status		
Single	39	52.7
Married	28	37.8
Divorced	4	5.4
Widowed	3	4.1
ARV consumption		
Yes	72	97.3
No	2	2.7

Based on Table 2 above, as many as 62.2% of respondents felt the sleep quality was good enough. Respondents spent the most time starting sleep for 16-30 minutes in the sleep latency component, with a 39.2% percentage. The sleep duration component in respondents slept the most, lasting more than 7 hours (37.8%). In the sleep efficiency component, most respondents have a good sleep efficiency ratio, with a percentage of 86.5%. In addition, the most common sleep disorders experienced by respondents were mild sleep disorders, with a percentage of 75.7%. Most respondents did not consume sleeping pills, as many as 72 people with a percentage of 97.3%, and most experienced dysfunction during the day, such as drowsiness during activities for more than 2x a week with a percentage of 33.8%.

Table 2. Components of sleep quality of HIV patients

Component Sleep Quality	n	%
Subjective sleep quality		
Excellent	14	18.9
Good enough	46	62.2
Bad enough	13	17.6
Very bad	1	1.4
Sleep latency		
≤15 minutes	22	29.7
16-30 minutes	29	39.2
31-60 minutes	15	20.3
>60 minutes	8	10.8
Sleep duration		
>7 hours	28	37.8
6-7 hours	26	35.1
5-6 hours	15	20.3
<5 hours	5	6.8
Sleep efficiency		
>85%	64	86.5
75-84%	6	8.1
65-74%	4	5.4
<65%	0	0
Sleep eistrubances		
0	1	1.4
1-9	56	75.7
10-18	16	21.6
19-27	1	1.4
Use of sleeping medication		
Never	72	97.3
1x per week	1	1.4
2x per week	0	0
>2x per week	1	1.4
Daytime dysfunction		
Never	19	25.7
1x per week	18	24.3
2x per week	12	16.2
>2x per week	25	33.8

Table 3. HIV patient sleep quality scores and interpretations

Sleep Quality	n	%
PSQI score in the range of 0-21 (Median) (IQR)	6.0	3
Good (Score PSQI ≤5)	27	36.5
Poor (Score PSQI >5)	47	63.5

Respondents in this study amounted to 74 people. Shapiro-Wilk was used to perform a normality test, and the results showed a significance level of 0.006, indicating that the data is not normally distributed ($p < 0.05$). Thus, the researchers determined the median value of the sleep quality score using Table 3 above, which is 6 with an interquartile range of 3. In addition, the results showed that as many as 47 respondents had poor sleep quality (63.5%), and 27 respondents had good sleep quality (36.5%).

Table 4. Cross-tabulation of respondents' characteristics with sleep quality of HIV patients

Characteristic	Sleep Quality				Total	
	Poor		Good		n	%
	n	%	n	%		
Age Group						
Adolescent (10-18)	1	50	1	50	2	2.7
Adult (19-44)	35	61.4	22	38.6	57	77
Pre-Elderly (45-59)	11	73.3	4	26.7	15	20.3
Sex						
Male	29	58	21	42	50	67.6
Female	18	75	6	25	24	32.4

Based on Table 4 above, in the adolescent age group, the number of respondents who have poor sleep quality is one person (50%), the adult age group 35 people (61.4%), and the pre-elderly age group 11 people (73.3%). Poor sleep quality based on sex characteristics is most prevalent in women (75%) compared to men (58%).

DISCUSSION

Sleep quality of HIV patients

The study showed that most respondents had poor sleep quality. This aligns with a study conducted in Nigeria by Oshinaike et al. (2014), who reported smaller numbers of these studies. The difference in the findings of poor sleep quality in this study is related to differences in ethnicity, culture, and lifestyle between respondents and respondents in Nigeria. Characteristics such as ethnicity and culture cause differences in lifestyle in a person, so different lifestyles can also affect the excellent and impaired quality of sleep (Berman & Fradsen, 2016). In another study by Tadesse et al. (2014), higher numbers were found for poor sleep quality in PLHIV. The high number of patients with poor sleep quality in the study was because sleep quality was measured in HIV/AIDS patients, while in this study, sleep quality was only measured in HIV patients who had not entered the AIDS stage. HIV patients who have entered the AIDS stage will experience various kinds of opportunistic infections, drastic weight loss, the emergence of cancer, and secondary infections (Setiarto et al., 2021). Therefore, researchers assume that poorer sleep quality in PLHIV is related to the presence of various opportunistic infections and chronic diseases that arise during the AIDS stage.

In addition, this study's findings align with research conducted by Aliyah et al. (2019), which reported higher rates of poor sleep quality. In the study of Aliyah et al. (2019), the samples

taken were PLHIV outpatients, almost half of whom were non-compliant in taking ARVs. Antiretrovirals are the main form of pharmacological treatment for preventing the death of the body's immune system. ARV therapy works by stopping HIV replication at a level that cannot be detected through screening. This viral suppression is effective in preventing the presence of drug-resistant viruses and slowing the progression of the disease (Setiarto et al., 2021). This drug does have side effects in the form of insomnia and nightmares (Tadesse et al., 2014). However, these side effects can be reduced and disappear if HIV/AIDS patients adhere to regular ARV consumption (Sitorus et al., 2021). Researchers assume that non-adherence to ARV treatment in HIV/AIDS patients can affect a person's sleep quality. This is supported by the results of research conducted by Kamil et al. (2023), which show that the longer and more adherent duration of ARV treatment can improve good sleep quality for HIV/AIDS patients.

Another consistent study was conducted by Agustin et al. (2021), who reported almost the same rate (60%) for poor sleep quality in PLWHA (People Living with HIV/AIDS). Poor sleep quality in PLHIV is related to psychological stress and feelings of depression experienced by PLHIV when first diagnosed and during the disease. Exposure to stress by PLHIV can increase hypothalamic-pituitary-adrenal (HPA) activation, which can cause sleep disturbances (Berman & Fradsen, 2016). In addition, PLHIV usually gets negative stigma and discriminatory treatment from people around them, which can cause physical and psychological stress that causes feelings of depression (Ghoni & Andayani, 2020). This feeling of depression causes HIV/AIDS patients to have difficulty initiating sleep, maintaining sleep, and often waking up at night (Agustin et al., 2021).

Sleep quality consists of seven assessment components, including subjective sleep quality, sleep latency, sleep duration, sleep efficiency,

sleep disturbance, use of sleeping medication, and daytime dysfunction (Buysse et al., 1989). In this study, all four components included subjective sleep quality, sleep duration, sleep efficiency, and use of sleeping medication in most HIV patients who had no problems. However, in the sleep latency component, most HIV patients have a long time to start sleep, with a range of 16-30 minutes (39.2%). This aligns with research conducted by Aliyah et al. (2019), which shows longer sleep latency in most PLHIV patients within 31-60 minutes. Sleep quality is good if a person has a sleep latency of <15 minutes (Buysse et al., 1989). Long sleep latency can be influenced by psychological factors such as anxiety and tension a person feels before starting sleep and during sleep (Basri, 2021).

In the sleep disorder component, most HIV patients experience mild sleep disturbances that occur 1x a week (75.7%). This is in line with the research of Aliyah et al. (2019), which found that most PLHIV have mild sleep disorders. Sleep disorders are in the form of waking up in the middle of the night because of going to the bathroom, heat, cold, coughing, nightmares, pain, and other reasons such as anxiety and discomfort. In a study conducted by Sriyono (2023), poor sleep quality that occurs in PLHIV has something to do with anxiety. PLHIV with higher levels of anxiety have poorer sleep quality when compared to PLHIV with low levels of anxiety. Anxiety experienced by a person can make it difficult to sleep, cause nightmares, poor sleep, and surprise when waking up, which can affect sleep quality (Sriyono, 2023).

In addition, other studies say that comfort can affect a person's sleep. HIV/AIDS patients often experience physical problems such as dizziness, nausea, weakness, and other conditions that cause discomfort. This can affect a person's sleep quality (Amal & Issroviatiningrum, 2022). In the daytime dysfunction component, most HIV patients have drowsiness and difficulty moving during the day for more than 2x a week (33.8%). The results of this study are not in line with the research of Aliyah et al. (2019), which reported that most PLHIV do not experience dysfunction during the day. Researchers assume that drowsiness and difficulty moving during the day that occurs in HIV patients are related to sleep disorders that occur at night. When HIV patients wake up at night, and it is difficult to start sleeping again, it can shorten the duration of sleep, which causes drowsiness during activities during the day.

Sleep quality of HIV patients based on age group and gender characteristics

This study showed that poor sleep quality most often occurred in the pre-elderly age group, aged 45-59. After that, the adult age group was followed by those aged 19-44. This is in line with research conducted by Bedaso et al. (2020), who found that the most common age range for experiencing poor sleep quality in HIV patients is 55-64 years. After that, the age group is >65, and the age group is 22-54. Age is one of the factors that can affect a person's sleep. The elderly more often experience sleep disorders. This happens because homeostasis and circadian rhythms cause changes in the sleep cycle due to aging. During aging, various physiological rhythm changes affect sleep, such as body temperature, melatonin secretion, and neuroendocrine system fluctuations (Nguyen et al., 2019). Older HIV patients experience an aging process that leads to poorer sleep quality compared to younger HIV patients. Therefore, it can be concluded from the results of this study that age is one of the factors that affect sleep quality in HIV patients.

Based on the results of the study, it was found that poor sleep quality in HIV patients is more common in women than in men. This is in line with research conducted by Oshinaike et al. (2014), which found that women with HIV experience poorer sleep quality. Women tend to experience sleep problems more often because they are related to hormonal changes that occur during life, namely during the menstrual phase, pregnancy, postpartum, and menopause (Nowakowski et al., 2013). During the menstrual cycle, reproductive hormones regulate reproductive functions that affect sleep and circadian rhythms. In addition, during pregnancy, there will be hormonal fluctuations and postpartum, there will be a decrease in hormone levels, both of which can affect the sleep-wake cycle. During menopause, hormonal changes will occur due to the cessation of menstruation, which can also affect sleep (Nowakowski et al., 2013). From these findings, it can be concluded that gender is a factor that can affect sleep quality in HIV patients.

CONCLUSION

HIV patients at RSUD Sumedang mostly have poor sleep quality. Poor sleep quality in HIV patients is related to various factors such as age, sex, and the type of ARV consumed. Poor sleep quality can cause health problems. HIV

patients need to have good sleep quality so as not to worsen their condition and health status. Therefore, interventions are needed that can improve sleep quality in HIV patients.

CREDIT AUTHOR STATEMENT

FHA: Writing-original draft, conceptualization; **IP:** Conceptualization, data analysis, manuscript drafting; **BAN, ML, HH, SS:** Data analysis, manuscript drafting.

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