

Association Between Quality Of Sleep With Primary Headache In Siloam Hospital Karawaci

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Abstract

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Primary headache is a the most common neurological complaint, and experienced by almost everyone throughout life. The most common type of primary headache is TTH (Tension Type Headache) and Migraine. Quality of sleep is associated with life satisfaction and data shows that one third of adults are affected by poor sleep. Many studies have mentioned that there is a relationship between quality of sleep and primary headache, but no study have ever been conducted in Siloam Hospital Karawaci. We did a case control study in Siloam Hospital Karawaci using purposive sampling, with a total of 50 patients as the subjects. Data were collected using PSQI questionnaire and DASS 42 between January 2019 – March 2019. It was found that there was a significant relationship between sleep quality and primary headache ($p = <0,001$).

Introduction

Primary headaches were disorders that encompasses a wide group of neurological disorders causing recurrent or persistent headaches for no apparent reason. The most common type of primary headache is tension-type headaches (TTH) and migraines.¹ People who experience sleep disorders usually have poor sleep quality which can cause other health problems.² Previous studies found a higher prevalence of poor sleep quality in patients with migraines compared to people without migraines.³ In individuals with chronic TTH, stress and sleep disturbances are the most common causes.⁴ Houle, et al. found that individuals who are sleep deprived for two consecutive days are at risk for experiencing headaches compared to individuals with adequate sleep.⁵ Shorter sleep duration is associated with more severe headaches.⁵ Also study shows 48 - 74% of patients with migraines and 26 -

71% of patients with TTH show lack of sleep as a triggering factor for headache attacks.⁶ Almost all adults have experienced primary headaches. Several previous studies have shown the presence of a relationship between poor sleep quality and the occurrence of primary headache, especially migraine-type headache and TTH.

Methods

This research is a quantitative analytic study. The subjects are Siloam Karawaci Hospital patients aged 20-50 years old who had been diagnosed with migraine or TTH in January-March 2019 by a neurologist based on the diagnostic criteria International Classification of Headache Disorders, 3rd edition (beta version) (ICHD-III beta). Exclusion criteria are patients who are diagnosed with a previous secondary headache or had a history of mild to severe head trauma at least 3 months previously. Data collection was conducted by direct interview using a Pittsburgh Sleep Quality

Index (PSQI and Depression, Anxiety and Stress Scales (DASS-42) questionnaire. Quality of sleep was assessed through the PSQI questionnaire which distinguished good sleep quality (PSQI ≤ 6) and poor sleep quality (PSQI > 6). The DASS-42 questionnaire can measure three types of emotional states, which are depression, anxiety, and stress in a person. Depression was divided into non-depression (DASS score for depression ≤ 9) and depression group (DASS score for depression > 9), anxiety was divided into non - anxiety (DASS score for anxiety ≤ 7) and anxiety group (DASS score for anxiety > 7) and stress was divided into non-stress (DASS score for stress ≤ 14) and stress group (DASS score for stress > 14).

Based on frequency, Migraine and TTH can be divided into three group such as mild (< 1 day/month), moderate (1-14 days/month), and severe (≥ 14 days/month). Descriptive analysis is used to study the characteristics of the respondent subject that include the average age, gender, and occupation. Chi Square bivariate analysis was conducted to determine the relation between quality of sleep and primary headaches, while also looking for other variables associates with primary headaches such as depression, anxiety, and stress. Fisher's Exact test was performed to analyze the relationship between sleep quality and primary headache frequency because it did not meet the requirements for Chi Square.

Result

A total of 50 respondents who meet the inclusion criteria were collected and the characteristic as shown in Table 1. Out of 50 respondents, 25 respondents have primary headaches and 25 other respondents are control group that do not have primary headaches.

Table 1. Demographic characteristic of the subjects

| Characteristic | Primary Headache, n(%) (n=25) | Control Group, n(%) (n=25) | Total Population, n(%) (n= 50) |
|--------------------------|-------------------------------|----------------------------|--------------------------------|
| Mean Age \pm SD, years | 37.92 \pm 9.01 | 31.88 \pm 9.17 | 34.90 \pm 9.50 |
| Gender | | | |
| Man | 8 (32) | 9 (36) | 17 (34) |
| Woman | 17 (68) | 16 (64) | 33 (66) |
| Job | | | |
| Housewife | 10 (40) | 7 (28) | 17 (34) |
| Private Employees | 6 (24) | 7 (28) | 13 (26) |
| Government Employees | 2 (8) | 2 (8) | 4 (8) |
| Merchant | 3 (12) | 2 (8) | 5 (10) |
| Student | 1 (4) | 4 (16) | 5 (10) |
| Barista | 0 | 2 (8) | 2 (4) |
| Security | 0 | 1 (4) | 1 (2) |
| Teacher | 1 (4) | 0 | 1 (2) |
| Taxi bike | 1 (4) | 0 | 1 (2) |
| Builder | 1 (4) | 0 | 1 (2) |

Based on tests conducted by bivariate analysis method there are two variables that have a significant association with primary headaches. These variables are quality of sleep ($P = < 0.001$) and depression ($P = 0.001$). The results of the bivariate analysis are shown in Table 2.

Table 2. Correlation between Quality of Sleep, Depression, Anxiety, Stress and Primary Headache

| Variable | Primary Headache, n(%) (n=25) | Control Group, n(%) (n=25) | P value | OR |
|------------------|-------------------------------|----------------------------|-------------|--------|
| Quality of Sleep | | | | |
| Good | 3 (12) | 23 (92) | $< 0,001^*$ | 84,333 |
| Poor | 22 (88) | 2 (8) | | |
| Depression | | | | |
| Yes | 14 (56) | 2 (8) | 0,001* | 14,636 |
| No | 11 (44) | 23 (92) | | |
| Anxiety | | | | |
| Yes | 16 (64) | 9 (36) | 0,090 | 3,16 |
| No | 9 (36) | 16 (64) | | |
| Stress | | | | |
| Yes | 12 (48) | 6 (24) | 0,141 | 2,923 |
| No | 13 (53) | 19 (76) | | |

In addition to analyzing quality of sleep association with primary headache, another analysis was also conducted to determine the sleep quality's association with the frequency of primary headache. The analysis included frequency of the overall primary headaches (TTH and migraine), frequency of TTH, and frequency of migraine. This analysis was performed by

combining mild and moderate frequencies into one group, followed by severe frequencies and its association with quality of sleep (Table 3, Table 4, Table 5).

Table 3. Correlation Between Quality of Sleep and Primary Headache Frequency

| Variable | Primary Headache Frequency, n (%) | | P Value | OR |
|------------------|-----------------------------------|----------|---------|-----|
| | Mild-Moderate | Severe | | |
| Quality of Sleep | | | | |
| Good | 7 (50) | 2 (18,2) | 0,208 | 4,5 |
| Poor | 7 (50) | 9 (81,8) | | |

Table 4. Correlation Between Quality of Sleep and TTH Frequency

| Variable | TTH Frequency, n (%) | | P Value | OR |
|------------------|----------------------|----------|---------|-----|
| | Mild-Moderate | Severe | | |
| Quality of Sleep | | | | |
| Good | 4 (50) | 2 (28,6) | 0,608 | 2,5 |
| Poor | 4 (50) | 5 (71,4) | | |

Table 5. Correlation Between Quality of Sleep and Migraine Frequency

| Variable | Migraine Frequency, n (%) | | P Value | OR |
|------------------|---------------------------|---------|---------|----|
| | Mild-Moderate | Severe | | |
| Quality of Sleep | | | | |
| Good | 3 (50) | 0 | 0,2 | 5 |
| Poor | 3 (50) | 4 (100) | | |

Through a bivariate analysis of association between quality of sleep and primary headache frequency, which includes frequency of the overall primary headaches, frequency of TTH, and frequency of migraine, it can be concluded that there is no association between quality of sleep and primary headache frequency.

Multivariate analysis was also conducted to analyze the relationship of confounding variables: depression, anxiety, and stress with the dependent variable of primary headache. Multivariate analysis was performed using the Logistic Regression test at SPSS. The variables included in the multivariate analysis with the dependent variable for primary headache were the

variables that in the bivariate analysis obtained p-value <0.250. These variables include sleep quality, depression, anxiety, and stress. After analysis of these three variables are obtained, it was found that quality of sleep has an association with primary headaches (95% CI, 11.055 to 2154.857), whereas depression, anxiety, and stress do not have a significant association with quality of sleep. The results of the analysis are shown in Table 6.

Table 6. Multivariate Analysis

| Variable | P Value | Odd Ratio | 95% Confidence Interval | |
|------------------|---------|-----------|-------------------------|----------|
| | | | Lower | Upper |
| Quality of Sleep | <0,001 | 154,343 | 11,055 | 2154,857 |
| Depression | 0,056 | 16,119 | 0,932 | 278,712 |
| Anxiety | 0,930 | 0,901 | 0,089 | 9,099 |
| Stress | 0,447 | 3,074 | 0,170 | 55,648 |

This multivariate analysis also shows that depression, anxiety, and stress variables as confounding variables do not cause a change in the OR value of quality of sleep (independent variable) by more than 10%, so these three variables are not confounding variables for the association between quality of sleep and primary headache. The final OR value obtained by the quality of sleep variable is 154.343, so it can also be explained that people who experience poor quality of sleep have a chance of having primary headache 154.343 times more likely compared to people who have good sleep quality.

Discussion

This study aims to see the association between quality of sleep and primary headache in Siloam Karawaci Hospital patients. The variable analyzed for its association with primary headache was quality of sleep. Meanwhile, the confounding variables analyzed were depression, anxiety, and stress. In this study, it was found that quality of sleep variables have a significance value ($P < 0.001$), indicating that there is a significant association between quality of sleep with primary headache.

A significant association between quality of sleep with primary headaches were found in this study. The same thing is also found in a study conducted by Agus A, 2015, that there is a statistically significant correlation between poor quality with primary headaches ($P < 0.001$).⁷ Cesar F, 2017 suggests that there is a two-way relationship between headaches and poor sleep quality. Poor sleep quality can cause headache and headache can cause poor sleep quality.⁴

In a study conducted by Brit AB, 2014, there is a significant relationship between depression and the incidence of recurrent primary headaches ($P = < 0.001$).⁸ The statement is in accordance with the results of this study, which found that depression has a significant value to the relationship with primary headache ($P = 0.001$).

Analysis of the association between quality of sleep and overall primary headache frequency, TTH, and migraine frequency showed no significant association. Whereas in a study conducted by M. Ichsan AS, 2017, it was stated that sleep quality had a significant relationship with headache frequency ($P = 0.001$), with a strong correlation ($r = 0.581$).⁹ The same thing was stated by Helen FB, 2005, increased headache frequency led to a strong association with sleep disturbances.⁶

The difference results in this study with previous studies can occur because the difference in the number of respondents is quite large between this study and the two studies. There are also differences in the target population and sample characteristics in the form of differences in age, occupation, and habits so that the results obtained are different.

Researchers also observed that most patients with headache complaints would come to the hospital for treatment if the complaints they experienced disturbed the patient's activity and sleep quality, moreover, most patients with headaches prefer to rest at home. This is thought to be one of the things that can affect the results obtained by researchers.

After multivariate analysis, significant results were found only on the variable quality of sleep. Meanwhile, depression, anxiety, and stress were also included in the multivariate analysis showing insignificant association results. This eliminates the notion of depression, anxiety, and stress as confounding variables for the association between quality of sleep and primary headache.

This study has several weaknesses such as the research methods used can not assess the causal relationship between sleep quality with other variables. This study also uses subjects in certain populations and places so that the results obtained may not necessarily describe the same conditions in different populations and places. There are several strengths in this study, such as the discovery of a significant association between quality of sleep and primary headache ($p < 0.001$), filling out the research questionnaire conducted by interview so that there is no difference in perceptions in filling and using a validated questionnaire.

Conclusion

There was a significant association between quality of sleep and primary headache among subjects. However, there was no association between quality of sleep and overall primary headache frequency, TTH frequency, and migraine frequency. Patient who experience poor quality of sleep have a chance of having primary headache 154.343 times more likely compared to people who have good sleep quality.

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