# Understanding Sleep Quality Issues in Patients with Peripheral Vertigo

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## Abstract

**Background :** Vertigo is the most common complaint in practice. There is a discussion about whether peripheral vertigo can affect sleep qualit.
**Objective:** To determine the picture quality of sleep in patients with peripheral vertigo in Neurology and ENT Clinic in Haji Adam Malik Hospital and University of SumatraUtara Hospital.
**Method :** This study is an analytic description with a*cross sectional study approach* . The sampling technique used is *non-probability sampling*, namely *consecutive sampling*. Data using primary data using questionnaires PSQI.
**Results:** Of the 60 patients diagnosed with peripheral vertigo, BPPV obtained as many as 46 people (76.7%), *Vestibular neuritis* 7 (11.7%), *Meniere's Disease* 6 (10.0%), and labyrinthitis by 1 person (1.7%). In peripheral vertigo patients found poor sleep quality as many as 50 people (83.3%).
**Conclusion** : It was found a picture of poor sleep quality significantly in peripheral vertigo patients.

## Introduction

The balance system is a system that is important for human life. The balance system makes humans able to realize the position of the surrounding space. Balance is a system that integrates with each other, including the visualsystem, vestibule, the propioseptive system and the cerebellarsystem. Disorders on system balance ( *Dizziness* ) that is will raises various complaints, including a spinning sensation often called vertigo. Vertigo is often expressed as dizziness, staggering, the feeling of drifting, the body or the world around it rotates and turns and turns. [1]

Broadly speaking the classification of vertigo is vestibular vertigo and non vestibular vertigo. Based on the location of vertigo lesions are divided into 2 namely peripheral vertigo and central vertigo. Peripheral vertigo caused by interference on the part of the inner ear or vestibulocochlear cranial nerve (N. VIII), while in the central vertigo caused by a disease that comes from the Central Nervous System (CNS). Clinically, there is damage due to infarction or bleeding to the cerebellum, vestibular nuclei, or pathways to the brain stem. [2]

Sleep is a basic need for everyone. In the condition of rest and sleep, the patient does the recovery process to restore the body's stamina to be in optimal condition. [3] To assess the quality of sleep, the *Pittsburg Sleep Quality Index* (PSQI) questionnaire can be used. There are instruments to examine a person's sleep habits which include sleep schedules at night, when starting to sleep, schedule getup morning, total hour sleep, disturbance sleep in night day, quality sleep, use of sleeping pills, concentration in doing activities, problems that can be resolved during the past month, and one-room friends. [4]

On patient that suffer from vertigo peripheral found quality sleep that bad. [5] Poor sleep quality can result inphysiological balance disorders and psychology. Impact physiologycovers decline activity daily, fatigue, weakness poor neuromuscular coordination, slow healing process, the body's resistance decreases, and instability of vital signs. Whereas psychological effects include depression, anxious, and not concentration. Kaplan and Sadock report less more 40 - 50% of the elderly population suffer from sleep disorders. Chronic sleep disorders (10 15 %) caused by disturbance psychiatry, dependency drug and alcohol. [6]

The purpose of this study was to find out an overview of the quality of sleep in peripheral vertigo patients at the Haji Adam Malik General Hospital and the University of Sumatra Utara Hospital.

## Research Methods

This research is analytical research using *cross sectional* method . This study was conducted at the Neurology and Ear Nose Clinic of Haji Adam Malik General Hospital and USU Hospital in theperiod August 2018 to November 2018. The samples used in this study were 60 people with peripheral vertigo who met the inclusion criteria and exclusion. Data collection is done by questionnaire and using *consecutive sampling* method . The measuring instrument used in this study used a questionnaire PSQI ( *The Pittsburgh*

*Sleep Quality Index* ) to assess sleep quality . The data that has been collected will then be analyzed statistically using the program SPSS.

**Result**

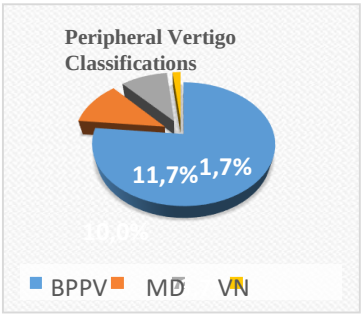
The majority of patients with age> 40 years of vertigo peripheral were 52 patients (86.7%). Based on sex found a majority of women as many as 39 people (65.0%). Based on education, the majority of high school found 33 people (56.7%). Based on Job found a majority of Housewives ( IRT ) as many as 20 people (33.3%). The characteristics of peripheral vertigo patients at H. Adam Malik General Hospital Medan and University of North Sumatra Hospital in 2018 can be seen in Table 1.

***Table 1. Distribution of Frequency Characteristics of Respondents***

| **Characteristics** | **Respondent en (% )** | |
|---|---|---|
| Age in years | | |
| ≤ 40 | 8 | (13,3) |
| > 40 | 52 | (86.7) |
| Gender | | |
| Man | 21 | (35.0) |
| Women | 39 | (65.0) |
| Education | | |
| Elementary school | 4 | (6,7) |
| Junior high school | 5 | (8.3) |
| High school | 33 | (56,7) |
| Diploma | 4 | (6,7) |
| Bachelor | 14 | (23,3) |
| Work | | |
| IRT | 20 | (33,3) |
| Farmer | 2 | (3,3) |
| Entrepreneur | 5 | (8.3) |
| Honorary | 4 | (6,7) |
| Private employees | 5 | (8.3) |
| College student | 1 | (1.7) |
| Civil servants | 18 | (30.0) |
| TNI | 1 | (1.7) |
| Retired | 4 | (6,7) |
| **Total** | **60** | **(100)** |

The majority of Benign Paroxismal Positional Vertigo (76.7%) were found, followed by Vestibular Neuritis (11.7%), Meniere Disease (10.0%), and Labyrinthitis (1.7%). Next is the incorporation of Vestibular Neuritis, Meniere Disease, and Labyrinthitis into other Peripheral Vertigo with a percentage of 23.3%. The frequency distribution of peripheral vertigo classification and incorporation of other peripheral vertigo classifications (Meniere's Disease, Vestibular Neuritis, and Labyrinthitis) can be seen in Figures 1 and 2.

It was found that the frequency of respondents' sleep quality distribution was mostly 50 people (83.3%) (Table 2). In BPPV patients and other peripheral vertigo, the majority of poor sleep quality was found in 42 people (91.3%) and 8 people (57.1%); while good sleep quality was only found in 4 people (8.7%) in BPPV patients and 6 people (42.9%) in other peripheral vertigo patients. It was found that the picture of sleep quality was significantly worse in patients with peripheral vertigo (p = 0.007) (Table 3).




*Picture 1. Distribution Frequency Peripheral Vertigo*

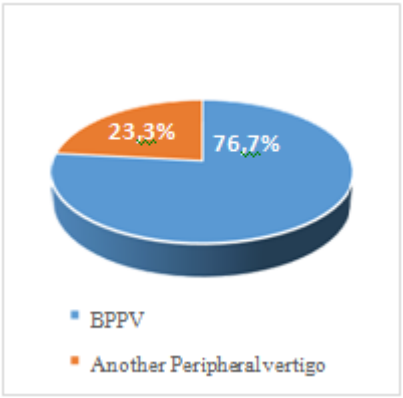



*Figure 2. Distribution Frequency of Vertigo Peripheral Classification*

*Table 2. Frequency of Sleep Quality Distribution*

| Sleep Quality | Frequency | % |
|---|---|---|
| Bad | 50 | 83.3 |
| Well | 10 | 16.7 |
| **Total** | **60** | **100** |

*Table 3. Overview of Sleep Quality in Patients with Peripheral Vertigo*

| *Peripheral Vertigo* | Sleep Quality | | | | Total | | *p* |
|---|---|---|---|---|---|---|---|
| | Bad | | Well | | | | |
| | n | % | n | % | N | % | |
| BPPV | 42 | 91.3 | 4 | 8.7 | 46 | 100 | |
| Other peripheral vertigo | 8 | 57,1 | 6 | 42.9 | 14 | 100 | 0.007 |
| **Total** | **50** | **83.3** | **10** | **16.7** | **60** | **100** | |

Test *fisher exact*

## Discussion

In this study found the majority of respondents aged> 40 years as many as 52 people (86.7%) and minorities ≤ 40 years as many as 18 people (13.3%). This is in accordance with the Ogah (2017) study which states that patients with peripheral vertigo aged 41-50 with a percentage of 34.0%. [7] Research Hastuti et al (2017) also stated that patients with peripheral vertigo were mostly 50-60 years old with a percentage 38.2%. 8 Similar results were also obtained from quotations from the Iwasaki and Yamasoba study (2015) reported 56.0% of patients over 50 years of age had peripheral vestibular causing vertigo. [9] One classification of the most common peripheral vestibular vertigo is BPPV, where in Pollak et al. (2005) explained that in old age there was a degeneration process in one of them in the utricle caused by chronic ischemia which caused the release of autoconia from otolith organs as the cause of the increase in BPPV. -Lami (2015) which states that the

occurrence of peripheral vertigo in the elderly is caused by a decrease in flexibility ability and function of otolytic membranes.[11]

Based on gender, this study found a majority of women as many as 39 people (65.0%) and a minority of men as many as 21 people (35.0%). Some studies show the same results. In the study conducted by Hastuti et al (2017) and Sumadilaga et al (2017) it was found that the incidence of peripheral vertigo was more common in women with a percentage of 64.7% and 67.3%, whereas in men with a percentage of 35.3% and 32, 7% .[8,12]

In this study it was found that the majority of peripheral vertigo classifications were BPPV as many as 46 people (76.7%), followed by Vestibular Neuritis as many as 7 people (11.7%), Meniere's Disease as many as 6 people (10.0%), and minority Labirinitis 1 person (1.7%). Research conducted by Bansal (2016) states that the most common peripheral vestibular vertigo is BPPV (18.8%), Meniere Disease (9.37%), Vestibular Neuritis (12.5%), and Labyrinthitis (3.1%).[13]

In this study, there were 50 poor people (83.3%) and 10 respondents (16.7%) who had poor sleep quality. Where of the 46 respondents who suffered BPPV there were 42 people (91.3%) who experienced poor sleep quality and 4 people (8.7%) who experienced good sleep quality. While from 14 other peripheral vertigo people found 8 people (57.1%) experienced poor sleep quality and 6 people (42.9%) experienced good sleep quality. It was found that the picture of sleep quality was significantly worse in peripheral vertigo patients with a p value of 0.007 ($p < 0.05$).

This study was supported by research by Albathi and Agrawal (2018) who found an association between vestibular vertigo and sleep duration (<6 hours of short sleep duration; 6-8 hours of normal sleep duration,> 8 hours long sleep duration) in which around 30% of individuals those with vestibular vertigo had abnormal sleep duration (5.5% short duration and 14.8% long duration). Individuals with vestibular vertigo have a risk of 1.75 x having a short sleep duration with a value of $p < 0.001$ and 1.55 x long sleep duration with $p < 0.001$ compared to individuals without vestibular vertigo.[14]

The same was done by Wang et al. (2018) where his research found a significant relationship between BPPV and sleep quality (lower sleep quality) .[15] Research conducted using PSQI (Pittsburg Sleep Quality Index) with five individual sleep items, including subjective assessments of sleep quality, sleep latency, sleep duration, sleep medication use and daytime disturbances, this indicates a higher PSQI score has a higher risk of BPPV recurrence with a value of $p = 0.0082$. Lack of sleep can occur because there are several problems that always interfere with their sleep such as waking up in the middle of the night or waking up too early, waking up to go to the bathroom at night, having difficulty breathing comfortably, feeling pain and adding because they have many problems which makes them enthusiastic to solve it.

## Conclusion

The most frequent classification of peripheral vertigo is BPPV (76.7%). It was found that the picture of sleep quality was significantly worse in patients with peripheral vertigo.

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