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# Factors Associated with the Incidence of Vertigo in Konawe District

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### ABSTRACT

**Introduction:** Based on data obtained from the Konawe District Health Office, it is known that there are still many women affected by Vertigo and each year it has increased. There were 2,460 cases recorded in 2020, in 2021 there were 2,770 cases, while in 2022 month 6 there were 2,890 cases. The purpose of this study was to analyze the factors associated with the incidence of vertigo in Konawe District.

**Method:** This research was a quantitative observation with using a Cross Sectional Study design. This research was carried out from October to November 2022. The research population was all people suffering from disabled neurological diseases at the Konawe district health office living in the Konawe district in 2021 totaling 698 cases with the sample is 97 respondents.

**Result:** The results showed that the results of the chi-square test on the work fatigue variable obtained an  $X^2$  hit value = 23.642, stress obtained an  $X^2$  hit value = 25.630, and sleep patterns obtained an  $X^2$  hit value = 26.085.

**Conclusion:** The conclusion was that there is a relationship between work fatigue, stress and sleep patterns with the incidence of vertigo in Konawe Regency, the most dominant variable associated with the incidence of vertigo is sleep pattern variable.

### Introduction

Vertigo is a symptom or complaint in the form of a spinning feeling as if it is moving, this disease causes a loss of balance which is usually accompanied by nausea and vomiting in sufferers so that it interferes with daily activities and hinders functional tasks.<sup>[1]</sup>

According to the World Health Organization (WHO) in 2019 the incidence of vertigo in the world is around 1.8-2.1 million of the total population each year, in America (22%), Germany (31%), Japan (14.5%), Canada (35%), and China

(29.5). In Southeast Asia around 586,635 of the population annually. The prevalence of Vertigo in America is 85% which is caused by disorders of the vestibular system due to changes in position or movement of the head. Vertigo prevalence in Germany says at the age of 18 to 79 years, 30% and 24% of them are assumed to be due to vestibular disorders. Research in France found 12 months later the prevalence of vertigo was 48%. 75% of patients who experience vestibular vertigo have peripheral vertigo disorders and 25% have central vertigo.<sup>[2]</sup>

Indonesia's health profile data in 2019 also noted that the city with the most records of vertigo in Indonesia was Medan City which reached 91.6%, then in several other cities such as Jakarta 50%, Palembang 35.35%, Bandung 32.5%, Surabaya 31.2%, Denpasar 46%, Aceh 31.7%, and Pontianak 31.2%.<sup>[3]</sup>

Based on data from Southeast Sulawesi Province, in 2019 the number of cases of Vertigo found in Southeast Sulawesi was 36,243 cases (21.4%), in 2020 there were 39,240 cases of vertigo (22.8%) and in 2021 there were 42,450 vertigo sufferers. cases (24.2%). Vertigo sufferers in Southeast Sulawesi in 2021 noted that Konawe Regency was in the highest order with a prevalence of 29.4%, followed by Muna Regency 27.2%, Kendari City 26.1%, Kolaka Regency 25.9%, North Kolaka Regency 26.6 %, South Konawe Regency 24.8%, Bombana Regency 24.6%, Bau-Bau Regency 22.4%, Central Buton Regency 13.7%, Wakatobi Regency 12.9%, South Buton Regency 8.9%, Regency West Muna 7.8%, North Konawe Regency 3.4%, North Buton Regency 2.6% and Islands Regency 4%.<sup>[4]</sup>

According to several previous studies, it was stated that 1/3 of people complaining of dizziness experience vertigo. The incidence of vertigo itself is not much, only 4.9% of ordinary dizziness complaints (migraine-related vertigo is 0.89% and Benign Paroxysmal Positional Vertigo (BPPV) is 1, 6%). Even though vertigo is not a disease that many people know and has a high incidence, someone with vertigo can be dangerous, because they are at risk of falling during activities due to balance disorders and loss of consciousness.<sup>[5]</sup>

The problem in this study is the high number of Vertigo cases in Konawe District. This is based on the acquisition of data from the Health Profile of Konawe Regency from 2020 to 2022. In 2022 out of 29 Community Health Centers in Konawe Regency, Regional Public Service Agency Konawe Hospital ranks highest in cases of vertigo with a total of 257 cases, The second position is occupied by the Alosika Health Center with a total of 225 cases and the third position is occupied by the Tongauna Health Center with a total of 216 cases of 698 positive cases in Konawe District.<sup>[6]</sup>

## Method

This study aims to analyze the factors associated with the incidence of vertigo in Konawe District. This research was carried out from October to November 2022. The research population was all people suffering from disabled neurological diseases at the Konawe district health office living in the Konawe district in 2021 totaling 698 cases and a sample of 97 people obtained by proportional simple random sampling. Data collection techniques using secondary data searches and interviews using questionnaires. Data analysis was performed using the Chi Square test, at a 95% confidence level ( $\alpha = 0.05$ ).

## Result

**Table 1** showed that of the 57 respondents who experienced work fatigue, there were 44 respondents (77.2%) who suffered from vertigo and there were 13 respondents (22.8%) who did not suffer from vertigo. Then of the 40 respondents who did not experience work fatigue, there were 11 respondents (27.5%) who suffered from vertigo and there were 29 respondents (72.5%) who did not suffer from vertigo. Statistical test results obtained by the chi square value of  $X^2$  count = 23.642 > the value of  $X^2$  table = 3.841 and Phi ( $\phi$ ) = 0.494. This shows that  $H_0$  is rejected and  $H_a$  is accepted, meaning that there is a relationship between work fatigue and the incidence of vertigo in Konawe Regency.

**Table 2** showed that of the 58 respondents who experienced stress, there were 45 respondents (77.6%) who suffered from vertigo and there were 13 respondents (22.4%) who did not suffer from vertigo. Then of the 39 respondents who did not experience stress, there were 10 respondents (25.6%) who suffered from vertigo and there were 29 respondents (74.4%) who did not suffer from vertigo. Statistical test results obtained chi square value  $X^2$  count = 25.630 >  $X^2$  table value = 3.841 and Phi ( $\phi$ ) = 0.514. This shows that  $H_0$  is rejected and  $H_a$  is accepted, meaning that there is a relationship being stressed with the incidence of vertigo in Konawe District.

**Table 3** showed that of the 54 respondents who had disturbed sleep patterns, there were 43 respondents (79.6%) who suffered from vertigo

and there were 11 respondents (20.4%) who did not suffer from vertigo. Then of the 43 respondents who did not experience disturbed sleep patterns, there were 12 respondents (27.9%) who suffered from vertigo and there were 31 respondents (72.1%) who did not suffer from

vertigo. Statistical test results obtained chi square  $X^2$  count = 26.085 >  $X^2$  table value = 3.841 and Phi ( $\phi$ ) = 0.519. This shows that  $H_0$  is rejected and  $H_a$  is accepted, meaning that there is a moderate relationship between sleep patterns and the incidence of vertigo in Konawe District.

**Table 1.**  
**Relationship between Work Fatigue and Vertigo in Konawe District in 2022**

Work fatigue	Vertigo occurrence				Total	
	Vertigo		Not vertigo			
	n	%	n	%	n	%
Tired	44	77,2	13	22,8	57	100
Not Tired	11	27,5	29	72,5	40	100
Total	55	56,7	42	43,3	97	100

**Table 2.**  
**Relationship between Stress and Vertigo in Konawe District in 2022**

Stress	Vertigo occurrence				Total	
	Vertigo		Not vertigo			
	n	%	n	%	n	%
Stress	45	77,6	13	22,4	58	100
Normal	10	25,6	29	74,4	39	100
Total	55	56,7	42	43,3	97	100

**Table 3.**  
**Relationship between Sleep pattern and vertigo in Konawe District in 2022**

Sleep pattern	Vertigo occurrence				Total	
	Vertigo		Not vertigo			
	n	%	n	%	n	%
Disturbed	43	79,6	11	20,4	54	100
Not Disturbed	12	27,9	31	72,1	43	100
Total	55	56,7	42	43,3	97	100

## Discussion

Fatigue can be interpreted as a condition of decreased efficiency, work performance, and reduced physical strength or endurance to continue the activities that must be carried out. Fatigue is regulated centrally by the brain, in the central nervous system there is an activation system that is sympathetic and inhibition that is parasympathetic.<sup>[7]</sup>

Respondents who experience work fatigue but do not suffer from vertigo are caused by respondents who often make various efforts to prevent vertigo from occurring, including respondents avoiding sudden movements so they don't fall, using several pillows so that the head position while sleeping becomes higher, and respondents also avoid movement. then the respondent who does not experience fatigue but suffers from vertigo due to many factors including

the respondent having difficulty focusing and paying attention while working even though the working conditions are still in the light category, the respondent also finds it difficult to control negative thoughts that often arise so that they often daydream, feel confused and irritable. Another factor that causes vertigo in respondents is the age factor, where in this study most respondents who suffer from vertigo are over 50 years old.

Vertigo generally affects those aged 50 years and over. Even so, this disorder can still affect anyone at any age range. Vertigo is estimated to occur frequently at an average age of 51-57 years and rarely at the age of under 35 years without a history of head trauma. Whereas in 2008 in Indonesia the incidence of vertigo was very high, around 50% of people aged 75 years.<sup>[8]</sup>

Stress is a disturbance to the body and mind caused by the changes and demands of life. According to Charles D. Spielberger, stress is external demands that affect a person, for example an object in the environment or a stimulus that is objectively harmful. Stress can also be interpreted as pressure, tension, unpleasant disturbances that come from outside a person's self.<sup>[9]</sup>

Respondents who experience stress but do not suffer from vertigo are because respondents are able to respond to their problems by controlling their emotions well, adopting a healthy lifestyle, exercising regularly and participating in useful activities. In addition, respondents were also able to control themselves and avoid triggers so that vertigo does not occur, such as taking a calm attitude in dealing with various problems that occur in life. In someone who is experiencing stress can interfere with physical health and weaken the immune system. In addition, stress can also cause disturbances in the digestive system, reproductive system and sleep disturbances.<sup>[10]</sup>

In every disease, stress is the main reason that underlies people to get vertigo easily. Stress can be caused by many things, for example due to excessive workload, allergies to something due to other problems, feeling excessive anxiety and stress about something that will force our brains to work more than their portion. People who are under stress have the opportunity to get diseases in the head and stomach which are accompanied by nausea, vomiting which are also accompanied by headaches. The brain is a core that is very important for other members of the body to move,

if the brain is out of balance due to stress, it is likely due to a lack of supply of O<sub>2</sub> (oxygen) entering the brain which will cause vertigo.<sup>[11]</sup>

Sleep pattern is a form that varies from a state in which the human physiological system rests the body for a certain time to restore and repair the human body's system to carry out daily activities that can be awakened with the help of sensory stimuli, audio or other stimuli.<sup>[12]</sup>

The number of factors affect the quality and quantity of sleep, sleep quality implies an individual's ability to stay asleep and wake up with sufficient amounts of REM and NREM sleep. While the quantity of sleep means the total individual sleep time. Psychological, physiological and environmental factors can affect the quality and quantity of sleep. Some of these factors are as follows: age, physical illness, lifestyle and environment.<sup>[13]</sup>

Poor sleep quality can lead to physiological and psychological balance disorders. Physiological effects include decreased daily activities, feeling tired, weak, poor neuromuscular coordination, slow healing process, decreased immune system, and unstable vital signs. While psychology includes depression, anxiety, and not concentrating. Disruption of irregular sleep patterns will cause various complaints including a spinning sensation which is often called vertigo.<sup>[14]</sup>

Vertigo often makes sufferers experience difficulty sleeping. Lack of sleep will make vertigo symptoms worse. Meanwhile, an improper sleeping position will actually trigger vertigo symptoms and this also applies to people who haven't experienced it though.<sup>[15]</sup>

## Conclusion

The conclusion was that there is a relationship between work fatigue, stress and sleep patterns with the incidence of vertigo in Konawe Regency, the most dominant variable associated with the incidence of vertigo is sleep pattern variable.

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