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The Relationship Between Gender, Age, and Medical History with Body Balance Disorders in the Examination Participants at MAN 2 Sleman, DIY

Jacoba Nugrahaningtyas Wahjuning Utami[1*], Maratusholikhah Nurtyas[2], Sri Wulandari[3], Githa Andriani[4]
Respati Yogyakarta University
Corresponding Author: Jacoba Nugrahaningtyas Wahjuning Utami
nugrahaningtyas@respati.ac.id

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A B S T R A C T

Each responder has experienced balance disturbances. Frequent loss of balance can be a sign of an underlying health condition. The purpose of the study was to determine the relationship between gender, age, Medical History and anemia with balance disorders. The research method uses secondary data when doing community service at MAN 2 Sleman in May 2024. The results of female gender are more than male gender, namely 69.9% (58) respondents. The age of the majority of respondents is less than 25 years old, namely 68.7% (57) respondents. A total of 48 respondents or (57.8%) who did not have a Medical History. Respondents who did not experience anemia were 81.9% (68) of respondents. Respondents who experienced balance disorders were less than those who were normal, namely those who experienced balance disorders of 62.7% (52) respondents. Bivariate analysis found that the results of gender analysis using chi-square showed a p-value of more than 0.05, namely 0.744. Age 60 and over as many as 1 respondent experienced body balance disorders, age 25-59 who experienced body balance disorders as many as 16 respondents and age less than 25 years as many as 14 respondents who experienced body balance disorders and chi-square analysis showed a p-value of less than 0.05, namely 0.001, for a history of illness as many as 13 people who also experienced body balance disorders and analysis using chi-square showed that the p-value was more than 0.05 or 0.973. A total of 31 respondents out of 83 respondents who were anemic experienced balance disorders and chi-square analysis showed that the p-value was more than 0.05 or 0.126. Conclusion There is no association between gender, Medical History, and anemia with impaired body balance, there is an association between age and impaired body balance

INTRODUCTION

Background

A balance disorder is one that causes a respondent to feel unsteady, dizzy, lightheaded, or have a sense of moving, spinning or staggering (https://www.beaumont.org/conditions/balance-disorders, 2024). Every respondent has experienced loss of balance. However, frequent loss of balance may be a sign of an underlying health condition. Loss of balance can result from conditions that affect one of the body's systems. It can also be caused by damage to the muscles or nerves in the legs (Aubrey,2022). During this time, balance disorders are experienced by the elderly and can be triggered by various factors both biological and social. (Tahsin dkk, 2019)

Maintaining body balance is one of the most important abilities required for fall prevention in the elderly population. Unfortunately, with age, the sensory and motor control of postural balance is often affected. (Serap et al, 2015)

Some diseases and disorders affecting the inner ear or brain or certain medications can cause balance disorders. The causes can vary, ranging from infections (viral or bacterial), head injuries, blood circulation disorders (Ananya, 2023).

LITERATURE REVIEW

The balance is the ability to maintain the attitude or position of the body in a state of rest or movement. Good balance will involve several parts of the body such as the central nervous system, inner ear, eyes, muscles, bones and joints. Problems with any of these parts can affect balance (https://www.health.harvard.edu/topics/balance). Maintaining postural balance is one of the most important abilities required for fall prevention in the elderly population. Unfortunately, with age, the sensory and motor control of postural balance is often affected (Serap et al., 2015). Body conditions that disrupt the systems in the body can affect balance. One of the disorders in the body system that can cause balance disorders includes: Stroke, weakness in the main muscles (especially the thighs, abdomen and back) and other disorders of the central nervous system and peripheral nerves, including nerve damage to the legs and feet (peripheral neuropathy) can affect the ability to feel the surface of the ground where standing or walking. Other diseases of the nervous system can include disorders of the inner ear that can cause vertigo or dizziness. (https://www.health.harvard.edu/topics/balance). In addition, some diseases and disorders affecting the inner ear or brain or certain medications can cause balance disorders. The causes can vary, ranging from infections (viral or bacterial), head injuries, blood circulation disorders.

Risk factors for balance disorders include head injuries, ear infections, health conditions affecting the visual system, musculoskeletal system, blood pressure, and taking certain medications.
(https://www.bonsecours.com/health-care-services/ear-nose-throat-ent/conditions/balance-disorder) .

Hypertension is an important risk factor for cardiovascular morbidity and mortality, especially in the elderly. It is a significant chronic disease and is often asymptomatic. Patients with hypertension require optimal control and continuous adherence to prescribed medications to reduce the risk of cardiovascular, cerebrovascular and renal diseases (Nikolaos, et al. 2012).
Diabetes causes many complications, including retinopathy and peripheral neuropathy, which have been understood to cause gait instability and falls. (Linda dkk, 2016).

Serap et al (2015) According to a recent study, postural balance maintenance is one of the most important abilities required for fall prevention in the elderly population. Unfortunately, with age, the sensory and motor control of postural balance is often affected.
While Anemia is a condition in which the number of red blood cells or the concentration of hemoglobin in them is lower than normal. Anemia can cause symptoms such as fatigue, weakness, dizziness and shortness of breath, impaired balance etc.. (https://www.who.int/health-topics/anaemia#tab=tab_1)

METHODOLOGY

Research

This study was conducted using an analytical description research design using secondary data. The data used was total sampling. With a cross-sectional approach. The dependent variables in this study were age, gender, respondent's illness history and the independent variables were balance disorders.

Time of Research

This research was conducted in May 2024 at MAN 2, Sleman DIY.

Technique of Data Collection

After obtaining permission to collect data, the data is inputted. The data used in this study are data obtained during community service at MAN 2 Sleman, Yogyakarta.

Statistical Analysis

This study uses total sampling taken from secondary data. Data analysis in this study used univariate and bivariate analysis. Univariate analysis is a frequency distribution for data on respondent characteristics such as gender, age, Medical History, and balance disorders. While bivariate analysis for the relationship between gender, age, Medical History with balance disorders using chi-square.

RESULTS

Outcome

After the data is collected and analyzed, the results obtained are

1. Univariate

Table 1. Gender, Age, Medical History, Anemia and Balance Disorder

Variabel		f	%
Gender	Male	25	30,1
	Female	58	69,9
total		83	100
Age	>= 60 years	1	1,2
	25-59 years	25	30,1
	< 25 years	57	68,7
total		83	100
Medical History	no history	48	57,8
	have history	35	42,2
	total	83	100
Anemia	sever	1	1,2
	moderate	2	2,4
	mild	12	14,5
	normal	68	81,9
total		83	100
Body balance disorders	disorders	31	37,3
	normal	52	62,7
	total	83	100

Table 1. About the frequency distribution illustrates that female gender is more than male gender, namely 69.9% (58) respondents. The age of the majority of respondents is less than 25 years old, namely 68.7% (57) respondents. For a history of illness, 48 respondents or (57.8%) did not have a history of illness. Respondents who were not anemic were greater than those who were anemic. Respondents who did not experience anemia were 81.9% (68) of respondents. respondents who experienced balance disorders were less than those who were normal, namely those who experienced balance disorders of 62.7% (52) respondents.

2. Bivariate

Bivariate analysis was used to determine the relationship between gender, age, history of disease and anemia with body balance disorders which can be seen in the following table.

1. Gender

The results for gender can be seen in table 2 below.

Table 2. Gender

Crosstab

Count

		Body balance		
		Balance disorders	normal balance	Total
Gender	Male	10	15	25
	Female	21	37	58
Total		31	52	83

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.107[a]	1	.743		
Continuity Correction[b]	.006	1	.936		
Likelihood Ratio	.107	1	.744		
Fisher's Exact Test				.807	.465
Linear-by-Linear Association	.106	1	.745		
N of Valid Cases	83				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.34.

b. Computed only for a 2x2 table

Table 2. shows that the results of cross tabulation found that men who experienced body balance disorders were 10 respondents. While women who experienced body balance disorders were 21 respondents. The results of the analysis using chi-square show a p-value of more than 0.05, namely 0.744, in other words, there is no relationship between gender and body balance disorders.

a. Age

The results of cross tabulation and analysis using chi square obtained results such as table 3 below

Table 3. Age

Crosstab

Count

		Body balance		
		Balance disorders	normal balance	Total
Age	Elderly : >=60 years	1	0	1
	adult: 25-59 years	16	9	25
	<25 years	14	43	57
Total		31	52	83

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.249[a]	2	.001
Likelihood Ratio	13.469	2	.001
Linear-by-Linear Association	13.085	1	.000
N of Valid Cases	83		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .37.

Table 3. shows that the results of cross tabulation found that age 60 and over as many as 1 respondent experienced body balance disorders, age 25-59 who experienced body balance disorders as many as 16 respondents and age less than 25 years as many as 14 respondents who experienced body balance disorders. The results of the analysis using chi-square show a p-value of less than 0.05, namely 0.001, in other words, there is a relationship between age and body balance disorders.

b. Medical History

The medical history in this study is that respondents suffer from one or more than one hypertension, Diabetes Mellitus and uric acid values exceeding normal, as follows

Tabel 4. Medical History Responden

Crosstab

Count

		Body balance		
		Balance disorders	normal balance	Total
History of Desease	no history of desease	18	30	48
	have a history of desease	13	22	35
Total		31	52	83

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.001[a]	1	.974		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.001	1	.973		
Fisher's Exact Test				1.000	.579
Linear-by-Linear Association	.001	1	.974		
N of Valid Cases	83				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.07.

b. Computed only for a 2x2 table

Table 4 shows that 13 respondents with a history of illness also experienced body balance disorders. While the results of the analysis using chi-square show that the p-value is more than 0.05 or 0.973, in other words, there is no relationship between history of disease and body balance disorders..

c. Anemia

Anemia is the result obtained by measuring Hb levels. For cross tabulation of anemia and balance disorders, see table 5..

Tabel 5. Cross Tabulation of Anemia and Balance Disorders

Crosstab

Count

		Body balance		
		Balance disorders	normal balance	Total
Anemia	severe anemia	0	1	1
	moderate anemia	2	0	2
	mild anemia	3	9	12
	normal	26	42	68
Total		31	52	83

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.756[a]	3	.191
Likelihood Ratio	5.727	3	.126
Linear-by-Linear Association	.002	1	.968
N of Valid Cases	83		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .37.

Table 5. shows that as many as 31 respondents out of 83 respondents experienced balance disorders while the results of chi-square analysis showed that the p-valule was greater than 0.05 or 0.126 in other words there was no relationship between anemia and balance disorders.

DISCUSSION

The study results showed that there was no relationship between gender, history of disease and anemia with body balance disorders.

This study is not in line with https://www.helath.harvard.edu/topics/balance This research shows that good balance involves several parts of the body such as the central nervous system, inner ear, eyes, muscles, bones, and joints. In addition, this research is also not in line with what is conveyed by Serap (2015) which states that body conditions that disrupt systems in the body can affect balance. One of the disorders in the body system that can cause balance disorders includes: Stroke, weakness in the main muscles and other disorders of the central nervous system and peripheral nerves, including nerve damage to the legs and feet (peripheral neuropathy) can affect the ability to feel the ground where you stand or walk.

The results of this study are also not in line with what was conveyed (https://www.bonsecours.com/health-care-services/ear-nose throatent/conditions/balance-disorder) which states that risk factors for balance disorders include head injuries, ear infections, health conditions that affect the vision system, musculoskeletal system, blood pressure, taking certain medications.

For anemia, this study is not in line with the WHO statement that anemia can cause symptoms such as fatigue, weakness, dizziness and shortness of breath, impaired balance etc. (https://www.who.int/health topics/anaemia#tab=tab_1)

CONCLUSIONS

The conclusions of this research are

1. There is no relationship between gender and body balance disorders
2. There is a relationship between age and body balance disorders
3. There is no relationship between medical history and body balance disorders
4. There is no relationship between anemia and body balance disorders

RECOMMENDATIONS

1. It is hoped that many researchers will examine body balance from various fields of science so that there will be more references for balance.
2. It is hoped that the population and sample will be increased in order to capture balance disorders from various age groups and various accompanying diseases.

FURTHER STUDY

This research will be continued with different methods and populations and samples.

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