

## **Relationship Between Stress Levels and Hypertension Incidents in Menopausal Age Female Prisoners in Class II A Tanjung Gusta Women's Prison Medan**

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### **ABSTRACT**

**Background:** Hypertension in women is one of the effects of menopause, because there is a decrease in the hormone estrogen and an increase in the hormone cortisol. Women who have entered menopause tend to be easily stressed and cause an increase in blood pressure. One of the groups that is vulnerable to stress is female inmates. **Objective:** To determine the relationship between stress level and the incidence of hypertension in female inmates of menopausal age in class II A women's prison Tanjung Gusta, Medan. **Methods:** This study is an analytical research, with a cross sectional research design. Sampling in this study uses a purposive sampling technique. The respondents in this study were 62 people. The instrument used was a Sphygmomanometer to measure blood pressure and for measuring stress levels with the Perceived Stress Scale-10 (PSS-10) questionnaire. **Results:** In this study, the results of the Somer's D test ( $p=0,259$ ) were obtained, which showed that there was no significant relationship between stress levels and the incidence of hypertension in female inmates of menopausal age in class II A women's prison in Tanjung, Gusta Medan. **Conclusion:** There was no significant relationship between stress levels and the incidence of hypertension in female inmates of menopausal age in class II A women's prison in Tanjung, Gusta Medan.

**Keywords:** *Stress, Hypertension, Menopause*

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## **1. INTRODUCTION**

Based on the World Health Organization (WHO) Hypertension is a condition characterized by systolic blood pressure reaching  $\geq 140$  mmHg, and/or diastolic blood pressure of  $\geq 90$  mmHg. This condition is actually common, but has the potential to become a serious problem if not treated properly. According to the World Health Organization (WHO) the highest prevalence of hypertension sufferers is in the African region, which is 27% and the lowest prevalence of hypertension sufferers is in the American region, as much as 18%. In adults, sufferers of high blood pressure have increased from 594 million people in 1975 to 1.13 billion in 2015 (WHO, 2023).

Based on data from the Ministry of Health of the Republic of Indonesia (Kemenkes RI) 2019, Southeast Asia is in the 3rd highest position for hypertension cases, namely with a prevalence of 25% of the total population. According to data from the Ministry of Health of the Republic of Indonesia 2018, the prevalence of hypertension in Indonesia is recorded as being in 3rd position when compared to other regions in Southeast Asia. The prevalence of hypertension in Indonesia is 658,201 million people. The highest prevalence of hypertension is in DKI Jakarta, namely 121,153 million people and the lowest prevalence is in West Papua, namely 2,163 people. The Ministry of Health of the Republic of Indonesia noted that the prevalence of hypertension in North Sumatra is in the 4th highest position, when compared to other provinces in Indonesia, and the city of Medan is in the highest position, namely 7,174 people (Tumanggor et al., 2022).

Hypertension often occurs in women who have entered menopause, this is commensurate with the previous research conducted by Firdaus (2021), with the majority of respondents being female, namely 44 respondents (88%), it is known that respondents with an age range of 18-40 years were 7 respondents (14%), respondents with an age range of 41-60 years were 23 respondents (46%) and respondents with an age > 60 years were 20 respondents (40%).

Based on these results, the highest number of hypertension sufferers was in the range of 41-60 years (46%) and for the second level were respondents with an age > 60 years 40% with the majority of women who had entered menopause. The results of the study showed that most people with hypertension were female (70.7%). This is because menopause is one of the causal factors that contributes to the high incidence of hypertension in women, when compared to the incidence of hypertension in men. (Prabaadzmaiah & Firdaus, 2021).

According to The National Institute for Health and Care Excellence (NICE) menopause is a clinical diagnosis for women aged over 45 years who have not had menstruation for 12 months. NICE Guidelines Diagnosis and Management of the Menopause states:

“If a woman is over 45 years of age and has not menstruated for 12 months or more, or has vasomotor symptoms and irregular menstruation or only symptoms (if she does not have a uterus), this is sufficient information to diagnose menopause and perimenopause.” (Chaplin, 2016).

*World Health Organization* (WHO) (2012), estimates that by 2030, the total number of women worldwide entering menopause will reach 1.2 billion people. In Indonesia, in 2025 it is estimated that there will be around 60 million menopausal women. The Indonesian Menopause Association (PERMI) 2005, conducted a survey in 5 cities in Indonesia, namely (Jakarta, Semarang, Bandung, Yogyakarta and Malang), menopausal women have complaints of forgetfulness, with a high level of complaints, namely (59.9%), and experience an increase in blood pressure, by (45.9%) (Lestari et al., 2020).

Hypertension in women is also one of the effects of menopause, because there is a decrease in the hormone estrogen and an increase in the hormone cortisol, so that menopausal women tend to be easily stressed which can have an effect on increasing blood pressure or hypertension (Lestari et al., 2020).

Based on the results of a review of 19 journals by Ridho (2021), there were 15 journals (78.95%) that stated a link between stress and the incidence of hypertension, and 4 journals (21.05%) stated that there was no link between stress and the incidence of hypertension. From the results of the analysis which stated that there is a relationship between stress and the occurrence of hypertension, it is proven that the higher the level of stress suffered by a person, the higher the risk of developing hypertension and the level of hypertension, conversely, individuals with lighter levels of stress tend to have lower levels of hypertension (Ridho et al., 2021).

One of the groups that has the potential to experience stress is female prisoners, this is in line with research conducted by Sarah (2019), which was located in the Class II A Tanjung Gusta women's prison, Medan, where the results of the study showed that the level of stress experienced by the light intervention group was (61.9%), moderate stress was (38.1%), the stress level of the control group was mostly severe (52.4%), and moderate stress was (47.6%) (Sarah, 2019).

Prisoners suffer from different levels of stress, this condition can cause prisoners to suffer from different levels of stress. Therefore, it can be concluded that prisoners who suffer from stress have their mental health more easily disturbed (Mu'jizatullah, 2019).

Stress suffered by prisoners can be based on the length of the sentence that has been determined by the court. The sentence period is the duration or length of time the prisoner will undergo criminal sanctions in a correctional institution. (Nuria, 2016).

## 2. METHOD

This study is an analytical study with a cross-sectional research design, which aims to determine the relationship between stress levels and the incidence of hypertension in female prisoners of menopausal age at Class II A Tanjung Gusta Women's Prison, Medan. The population in this study were all female prisoners who had entered menopause in Class II A women's prison in Medan. The sample selection for this study was carried out using purposive sampling. Purposive sampling is a sampling technique with certain considerations (Sugiyono., 2013). So there are sample criteria in this study, namely female prisoners who suffer from hypertension and meet the inclusion and exclusion criteria. Female inmates at Class II A Tanjung Gusta women's prison, Medan, who have entered menopause, namely 45 years of age or older. Prisoners who are willing and able to become research respondents.

A research variable is something that can take any form, which is determined by the researcher to be studied, so that information is obtained about something, and then conclusions can be drawn (Sugiyono, 2012)

Research instruments are tools used in data collection. According to (Notoadmodjo, 2018) Research instruments are tools used to collect data, such as questionnaires, observation forms or other forms related to recording, and others. In this study, the instrument or data collection tool used to measure blood pressure is a sphygmomanometer. Meanwhile, for measuring stress levels with the Perceived Stress Scale-10 (PSS-10) questionnaire created by Sheldon Cohen which consists of ten questions, four positive questions on questions number 4, 5, 7, 8 and six negative questions on questions number, where each question is given a score of 0 to 4. The answer never will be given a score of 0, the answer almost never is given a score of 1, the answer sometimes is given a score of 2, the answer often is given a score of 3, and the answer very often is given a score of 4. The value of the score for positive questions, the calculation of the score will be reversed, score 0 = 4, score 1 = 3, score 2 = 2, score 3 = 1, and score 4 = 0 which are then added up so that the level of stress is known from the score obtained by the respondent after filling out the questionnaire. The higher the score, the higher the stress level. The score in PSS-10 is 0-40 (Indira, 2016). Mild stress

score = 0-13, moderate stress = 14-26, and severe stress = 27-40 (Hary, 2017). The results of the PSS trial obtained a Cronbach alpha value of 0.81, so it was concluded that the PSS questionnaire was valid and reliable for us.

In this study, the data collection method is by collecting primary data and secondary data. Primary data is taken directly from respondents in the form of blood pressure results using a sphygmomanometer and PSS-10 questionnaire. Secondary data in this study is a list of names of prisoners who have entered menopause, namely aged 45 years or more obtained from the class II A Tanjung Gusta women's prison, Medan

### 3. RESULTS AND DISCUSSION

Class II A Tanjung Gusta Women's Correctional Institution (Lapas), Medan, is one of the technical correctional units included in the North Sumatra Ministry of Law and Human Rights (Kemenkumham) Regional Office. The exact location of the Class II A Tanjung Gusta Medan Women's Correctional Institution is on Jalan Perumahan Tanjung Gusta, Helvetia Tengah, Medan Helvetia District, Medan City, North Sumatra.

#### 3.1. Data Analysis Results

To analyze the relationship between stress levels and the incidence of hypertension in postmenopausal women at Class II A Tanjung Gusta Women's Prison, Medan, Univariate and Bivariate analyses were conducted.

Table 1. Frequency Distribution of Respondents' Stress Levels

Stress Level	Frequency	Percentage (%)
Mild Stress	7	11.3
Moderate Stress	46	74.2
Severe Stress	9	14.5
Total	62	100.0

Of the 62 respondents, 7 people (11.3%) experienced mild stress, 46 people (74.2%) experienced moderate stress, and 9 people (14.5%) suffered from severe stress.

Table 2. Distribution of Respondents' Length of Prison Sentences

Stress Level	Frequency	Percentage (%)
Less Than 5 Years	9	14.5
More Than 5 Years	43	69.4
More Than 10 Years	9	14.5
Lifetime	1	1.6
Total	62	100.0

Of the 62 respondents, 9 people (14.5%) had a prison sentence of less than 5 years, 43 people (69.4%) had a prison sentence of more than 5 years, 9 people (14.5%) had a prison sentence of more than 10 years, and 1 person (1.6%) had a life sentence.

Table 3. Distribution of Respondents' Hypertension Incidents

Hypertension Incident	Frequency	Percentage (%)
Hypertension	25	40.3
No Hypertension	37	59.7
Total	62	100.0

Of the 62 respondents, 25 people (40.3%) had hypertension, and 37 people (59.7%) did not have hypertension. Based on the results of the Somer's D test analysis on the relationship between stress levels and the incidence of hypertension in menopausal women in Class II A Tanjung Gusta Medan women's prison, it was found that respondents with mild stress levels who experienced hypertension were 2 people (3.2%), and those who did not experience hypertension were 5 people (8.1%). Respondents with moderate stress levels who suffered from hypertension were 18 people (29.0%), and those who did not suffer from hypertension were 28 people (45.2%). Meanwhile, respondents with severe stress levels who experienced hypertension were 5 people (8.1%), and those who did not experience hypertension were 4 people (6.5%).

On test *Somer's D* This, the results of the statistical test ( $p = 0.259$ ) showed that there was no significant relationship between the relationship between stress levels and the incidence of hypertension in menopausal female prisoners in class II A Tanjung Gusta Medan women's prison. The  $r$  value obtained from the statistical test was  $-0.149$ , which means that the higher one variable is, the lower the other variable is. These results indicate that the correlation coefficient between stress levels and the incidence of hypertension in menopausal female prisoners in class II A Tanjung Gusta Medan women's prison is very weak.

### 3.2. Discussion

Based on the results of this study, from a total of 62 respondents, based on the classification of mild, moderate, and severe stress levels, 7 people (11.3%) experienced mild stress, 46 people (74.2%) experienced moderate stress, and 9 people (14.5%) experienced severe stress. This is in line with the results of research conducted by Putri, respondents with mild stress levels were 18 people (33.3%), 28 people (51.9%), and severe or severe stress levels were only experienced by 4 people (7.4%) (Putri et al., 2024).

In this study, out of a total of 62 respondents, 25 people (40.3%) had hypertension, and 37 people (59.7%) did not have hypertension. In this study, out of 62 respondents, 9 people (14.5%) received a prison sentence of less than 5 years, 43 people (69.4%) received a sentence of more than 5 years, 9 people (14.5%) received a sentence of more than 10 years, and 1 person (1.6%) received a life sentence. Although most respondents received a sentence of more than 5 years, few of the respondents experienced severe stress levels, this is in line with the results of research conducted by Anggraini, the results of the analysis of the relationship between sentence periods and stress levels in inmates at the Samarinda Class II A women's prison, using the Spearman Rank test, which analyzes the sentence period with stress levels in inmates at the Samarinda Class IIA women's prison.

The Spearman Rank test results obtained a significant value of (0.225) with a correlation of (0.085), which means that there is no significant relationship between the sentence period and the level of stress in prisoners in the Class II A Samarinda women's prison. This insignificant result could be due to many factors that can cause prisoners to experience stress or not, such as age, length of sentence, and the psychological impact of punishment that is not the same between individuals (Anggraini & Kurniasari, 2020).

In this study, out of 62 respondents, 25 people (40.3%) had hypertension, and 37 people (59.7%) did not have hypertension. Based on the results of the Somer's D test analysis of the relationship between stress levels and the incidence of hypertension in postmenopausal women in the Class II A Tanjung Gusta Medan women's prison, respondents with mild stress levels who had hypertension were 2 people (3.2%), and those who did not have hypertension were 5 people (8.1%). Respondents with moderate stress levels who had hypertension were 18 people (29.0%), and those who did not have hypertension were 28 people (45.2%). Meanwhile, respondents with severe stress levels who had hypertension were 5 people (8.1%), and those who did not have hypertension were 4 people (6.5%). Based on the results of the Somer's D test analysis, a value of ( $p = 0.259$ ) was obtained, which showed that there was no significant relationship between stress levels and the incidence of hypertension in menopausal female prisoners in class II A Tanjung Gusta women's prison, Medan. The  $r$  value obtained from the statistical test was -0.149, which means that the higher one variable is, the lower the other variable is. These results indicate that the correlation coefficient between stress levels and the incidence of hypertension in menopausal female prisoners in class II A Tanjung Gusta women's prison, Medan, is very low.

The results that do not have a significant relationship can be related to risk factors for hypertension, for the occurrence of hypertension not only stress and menopause. However, other risk factors are needed that occur simultaneously. Based on the Ministry of Health of the Republic of Indonesia (Kemenkes RI) 2013, Around 40% of deaths at a young age are due to uncontrolled hypertension. Factors that are at risk of causing hypertension can be grouped into two large groups, namely one factor that cannot be controlled, such as gender, age, genetics, race. While factors that can be controlled such as diet, exercise routines, the amount of salt consumption, coffee, alcohol and stress. The occurrence of hypertension requires the role of both groups of factors simultaneously to trigger hypertension (Fitriyani et al., 2020).

### 4. CONCLUSION

Based on the results of the analysis that have been completed from this research, several research conclusions have been obtained. Of the 62 respondents, 7 people (11.3%) experienced mild stress, 46 people (74.2%) experienced moderate stress, and 9 people (14.5%) experienced severe stress. Of the 62 respondents, 25 people (40.3%) had hypertension, and 37 people (59.7%) did not have hypertension. Of the 62 respondents, 9 people (14.5%) had a prison sentence of less than 5 years, 43 people (69.4%) had a prison sentence of more than 5 years, 9 people (14.5%) had a prison sentence of more than 10 years, and 1 person (1.6%) had a life sentence. In this study, the results of the Somer's D test analysis obtained statistical test results ( $p=0.259$ ) which showed that there was no significant relationship between stress levels and the incidence of hypertension in female prisoners of menopausal age at Class II A Tanjung Women's Prison, Gusta Medan. The  $r$  value obtained from the statistical test in this study is -0.149. This result indicates that the correlation coefficient is very weak between stress levels and the incidence of hypertension in female prisoners of menopausal age at the Class II A Tanjung Women's Prison, Gusta Medan.

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