

STRESS LEVELS AND INCIDENCE OF HYPERTENSION IN PRODUCTIVE AGE DURING COVID-19 PANDEMIC IN BANJARNEGARA 2 PUBLIC HEALTH CENTRE

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ABSTRACT

Article History

Submitted:xx/xx/20xx

Accepted:xx/xx/20xx

Published:xx/xx/20xx

Keyword:

COVID-19

Stress

Hypertension

Pandemic

Abstract:

Background: Hypertension is a world public health problem with a high prevalence of cases, especially in productive age. During the COVID-19 pandemic, there was an increase in comorbid cases, including hypertension. The increasing COVID-19 pandemic has caused physical and psychological symptoms and illnesses. One of the risk factors for hypertension is stress. This study aimed to determine the relationship between stress levels and the incidence of hypertension during a pandemic in the Banjarnegara 2 Health Center area.

Method: This was an observational analytic with a cross-sectional approach. As many as 65 participants were involved in this study that were selected using purposive sampling. A set of pre-tested questionnaire was adopted from DASS-42 to collect information from the respondents. Analysis was performed using the Spearman rank correlation test.

Results: Most productive-age respondents during the pandemic at Puskesmas Banjarnegara 2 had moderate stress levels (41.5%), followed by normal high hypertension (38.5%). Spearman rank correlation test showed a significant relationship between stress levels and the incidence of hypertension in productive age during the pandemic in the region Puskesmas Banjarnegara 2 with a *p*-value of 0.000 ($p < 0.05$). This result showed a positive and robust correlation of 0.743.

Conclusion: Stress levels were associated with the incidence of hypertension in productive age during the Banjarnegara 2 Health Center pandemic.

Abstrak:

Latar belakang: Hipertensi merupakan masalah kesehatan global dengan prevalensi kasus yang tinggi terutama pada usia produktif. Selama pandemi COVID-19, terjadi peningkatan kasus komorbid, termasuk hipertensi. Meningkatnya pandemi COVID-19 telah menimbulkan gejala, penyakit fisik dan psikis. Salah satu faktor risiko hipertensi adalah stres. Penelitian ini bertujuan untuk mengetahui hubungan antara tingkat stres dengan kejadian hipertensi pada masa pandemi di wilayah Puskesmas Banjarnegara 2.

Metode: Penelitian ini menggunakan pendekatan observasional analitik dengan cross-sectional. Sebanyak 65 partisipan terlibat dalam penelitian ini yang dipilih dengan menggunakan purposive sampling. Sebuah set kuesioner yang di test sebelumnya diadopsi dari DASS-42 untuk mengumpulkan informasi dari responden. Analisis dilakukan dengan menggunakan uji korelasi rank Spearman.

Hasil: Sebagian besar responden pada penelitian mengalami tingkat stres sedang (41,5%), diikuti hipertensi normal tinggi (38,5%). Uji korelasi rank Spearman menunjukkan adanya hubungan yang bermakna antara tingkat stres dengan kejadian hipertensi pada usia produktif pada masa pandemi di wilayah kerja Puskesmas Banjarnegara 2 dengan *p*-value 0,000 ($p < 0,05$). Hasil ini menunjukkan korelasi yang positif dan kuat sebesar 0,743.



Kesimpulan: Tingkat stres berhubungan dengan kejadian hipertensi pada usia produktif pada masa pandemi Puskesmas Banjarnegara 2

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How to Cite:

Istiqlal Nur Arifah, Sulistyawati Sulistyawati, "Stress Levels and Incidence of Hypertension in Productive Age During COVID-19 Pandemic in Banjarnegara 2 Public Health Centre," Indones. J. Heal. Sci., vol.x, no.x, pp. Xx-xx, 2020.

INTRODUCTION

The spread of the COVID-19 pandemic has been designated as a national disaster in Indonesia since April 13, 2020, through the Presidential Decree of the Republic of Indonesia Number 12 of 2020. According to daily data from the Indonesian Ministry of Health, the positive number of COVID-19 in Indonesia has reached 5,968,405 cases, and the death toll has reached 153,738 people as of March 20, 2022. The escalating COVID-19 pandemic is causing physical and psychological symptoms and illnesses. During the COVID-19 pandemic, there was an increase in comorbid cases, including hypertension [1]. Hypertension is a condition with increased arterial blood pressure [2].

The World Health Organization (WHO) said that the incidence rate of hypertension in the world is 22% of the total world population, and many are experienced by adult age or adult age, or productive age (20-60 years)[3]. Currently, people with hypertension tend to be higher in productive age compared to the elderly [4]. While in Indonesia, the prevalence of hypertension in the ≥ 18 years population in 2018 had increased by 34.1% compared to 2013 25.8% [5], [6]. In 2018, hypertension in Central Java Province was 38.80%, meaning that this province has a prevalence rate above the national average (32%)[7]. According to the Banjarnegara district profile year 2021, this district was one of the districts in Central Java with an incidence rate of hypertension of 325,625. Hypertension occupied the first position of the top 10 diseases in the Banjarnegara District Health Center in 2021 [8].

The high prevalence rate of hypertension can be influenced by several factors, one of which is stress [9]. Stress affects the increase in high blood pressure because stress is an unpleasant physical and psychological pressure, which can stimulate the child's kidney glands to release the hormone adrenaline and spur the heart to beat faster and more robustly, impacting the blood pressure increase. Stress can affect a

person's intrapersonal and interpersonal conditions; depression, stress, and anxiety are associated with increased life satisfaction. During a pandemic, a person will be vulnerable to stress, depression, and anxiety about COVID-19 and then experience decreased satisfaction in their life [10]. In addition, the pandemic makes respondents experience stress, anxiety, and depression due to restrictions on activities and activities outside the home [11].

The COVID-19 pandemic can also affect Mental and Emotional Disorders (MED). People generally felt anxiety, rejection, anger, fear, depressive symptoms, and stress [13]. According to psychosocial health data in Indonesia, there were 1,595 people recorded using health and psychosocial support services on March 24 to April 24, 2020. They used this health service to solve problems of panic, fear, anxiety, stress, or depression during the pandemic [14].

Meanwhile, based on information from Banjarnegara District health profile data on cases of people with Mental Emotional Disorders (MED) during the COVID-19 pandemic in 2021, it shows that Banjarnegara District ranks 8th in MED cases with 145 people. Our preliminary study at the Banjarnegara 2 Health Center found that the number of people participating in the Chronic Disease Management Program called *Prolanis* activities in January – February 2022 was as many as 180 survivors. Of these, it was found that people suffering from hypertension amounted to 118 of productive age (20-60 years) and the remaining 62 patients with hypertension with complications. Based on the results of interviews with puskesmas officers, it was known that the prevalence of new cases of hypertension averages 2-5 cases every month. New cases of hypertension can be established if the patient's blood pressure remains high in the range of 140/90 mmHg after checking blood pressure at least twice in a period of two to three weeks in the Primary Health Centre (Puskesmas).

The results of interviews with five respondents of productive age (20-60) years who came to the puskesmas found that three people with hypertension approximately one year ago said during the COVID-19 pandemic, they experienced complaints such as dizziness, insomnia, feeling tired, easily emotional, and irritable. This shows that 3 out of 5 respondents experienced signs of hypertension symptoms during the pandemic. Considering all backgrounds, we are interested in understanding the relationship between stress levels and the incidence of hypertension during a pandemic in the Puskesmas Banjarnegara 2.

RESEARCH METHOD

This was quantitative observational analytical research using a cross-sectional design. The population in this study was patients with hypertension recorded in the medical record of PROLANIS Puskesmas Banjarnegara 2 in January – February 2022, which amounted to 180 people. The sample size calculation employed the Slovin formula that obtained 65 respondents. We selected the sample using purposive sampling using inclusion criteria: aged 20–60 and patients with hypertension without complications.

We used the DASS-42 (Depression Anxiety Stress Scale 42) as our instrument to measure stress levels and health center medical record data. This questionnaire was pre-tested for validity and reliability tests before data collection due to modification of the items due to the COVID-19 pandemic. The result of validity and validity was (r = 0.355) and the p-value (p < 0.05), meaning the instrument was valid. While for reliability, we found Cronbach's Alpha value, r = 0.864, meaning that our instrument was classified as highly reliable. Two variables were assessed in this study, 1) the independent variable, namely the stress level, and 2) the dependent variable, namely the incidence of hypertension. Analysis was done using the Spearman rank test.

This research was approved by the Department of Public Health, Universitas

Ahmad Dahlan. A research permit was requested from the local health authorities.

RESULTS AND ANALYSIS

1. Characteristic Respondent

A total of 65 people participated in this study. Among them, more than 50% were women (56.92%). Most respondents aged between 45-60 years (84.62%). Most respondents experienced moderate stress (41.5%), followed by mild stress (32.3%). We found most of our respondents in the normal High hypertension category (38.5%) [Table 1].

Table 1. Characteristics of the participants in this study in Banjarnegara Health Center Area 2

	Variable	Frequency n (%)
Sex	Male	28 (43.08)
	Female	37 (56.92)
Age (year)	30-44	10 (15.38)
	45-60	55 (84.62)
Stress Level (DASS score)	Normal (0-14)	10 (15.28)
	Mild (15-18)	21 (32.31)
	Moderate (19-25)	27 (41.54)
	Heavy (26-33)	7 (10.77)
	Very Heavy (≥ 34)	0 (0)
History of Hypertension	Normal	15 (23.08)
	Hypertension	
	Normal High	25 (38.46)
	Hypertension Grade 1	17 (26.15)
	Hypertension Grade 2	8 (12.31)
	Hypertension	

2. Relationships Among the Variable Assessed

Spearman ranks statistical test results show a correlation coefficient value was 0.743 with p-value = 0.000 (p<0.05), meaning there was a relationship between stress levels and the incidence of hypertension in productive age during a pandemic in the UPT Puskesmas Banjarnegara 2 (Table 2).

Table 2. Relationship between Stress Level and the Incidence of Hypertension in

Productive Age during a Pandemic in the UPT Puskesmas Banjarnegara 2

Level Stress and score	Incidence of hypertension				Correlation (r)
	Normal	Normal High	Level 1	Level 2	
	n (%)				
Normal (0-14)	9 (13.8)	1 (1.5)	0 (0)	0 (0)	0.743 (p-value 0.00)
Mild (15-18)	5 (7.7)	14 (21.5)	1 (1.5)	1 (1.5)	
Moderate (19-25)	1 (1.5)	9 (13.8)	15 (23.1)	2 (7.4)	
Heavy (26-33)	0 (0)	1 (1.5)	1 (1.5)	5 (7.7)	

2. Discussion

Hypertension is a degenerative disease currently a big problem in the world, mainly because this disease does not occur directly but gradually over a long time, so sufferers ignore the symptoms [15]. Hypertension is currently a problem in all regions of Indonesia, especially in the population aged 30 years and over. As mentioned earlier, hypertension is one of the top 10 diseases in Banjarnegara District. So, this study chose PHC Banjarnegara 2 as a case study of this disease, especially during the COVID-19 pandemic. This is because, during the COVID-19 pandemic, psychological disorders occurred due to being infected with COVID-19 itself because of the stigma that occurred in the community or because of the inability to meet the needs of life during the pandemic, which resulted in psychological disorders such as stress [16]–[20].

Our research found a strong correlation between stress and hypertension. This finding approved several types of research that were done before and during the COVID-19 pandemic [21]–[25]. Stress is the risk factor for hypertension due to the onset of the COVID-19 pandemic problem experienced by people with hypertension during the COVID-19 pandemic is an increase in blood pressure that worsens due to the impact of psychological pressure in the form of stress [26]. Previous research stated that psychological pressure increases the risk

of hypertension by 9% [27]. Stress is a feeling of burden when experiencing problems that each individual cannot overcome. In addition, this pandemic causes various changes that can cause psychological disorders, such as stress, which causes a person's immune system to decrease, affecting their vulnerability to COVID-19 infection.

Stress that causes hypertension can be caused by several reasons. According to previous research, stress can be caused by work, social isolation, marriage, economic conditions, and racial discrimination [28]. During the COVID-19 pandemic, the causes of stress that trigger hypertension apply, including work, social isolation, and economic conditions. During the COVID-19 pandemic, occupations became one of the stressors, and they felt insecure; this was because many business establishments could no longer employ employees because of its relation to the social restriction policy. This condition of job uncertainty is directly correlated with a person's economic situation; if he does not work, his financial condition will decline. This is confirmed by previous research, which says that COVID-19 harms employees [29].

Meanwhile, social isolation is common in the community when COVID-19 occurs. This causes both COVID-19 sufferers and their families to feel stressed because the source of the infection stigmatizes them, then shunned, and they cannot carry out their usual activities [20]. This stress increases a person's blood pressure, especially in someone with a previous history.

CONCLUSION

Based on the results of our research, we suggest further research to find out more about why someone feels stress, as stated earlier, whether it is related to work, income, or other reasons. It is essential to formulate program solutions according to the actual situation that occurs.

ACKNOWLEDGEMENTS

The researcher would like to thank all of the Banjarnegara 2 Health Center staff and study participants.

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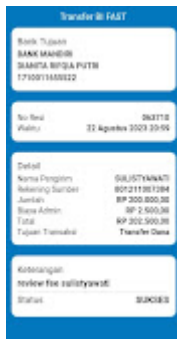
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Article History

Submitted:xx/xx/20xx
Accepted:xx/xx/20xx
Published:xx/xx/20xx

Keyword:

COVID-19
Stress
Hypertension
Pandemic

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Background: Hypertension is a world public health problem with a high prevalence of cases, especially in productive age. During the COVID-19 pandemic, there was an increase in comorbid cases, including hypertension. The increasing COVID-19 pandemic has caused physical and psychological symptoms and illnesses. One of the risk factors for hypertension is stress. This study aimed to determine the relationship between stress levels and the incidence of hypertension during a COVID-19 pandemic in the Banjarnegara 2 Health Center area.

Method: This was an observational analytic with a cross-sectional approach. As many as 65 respondents were involved in this study that were selected using purposive sampling. Respondents are people with hypertension recorded in the PROLANIS program at the Banjarnegara 2 Community Health Center for the period January-February 2022. A set of pre-tested questionnaire was adopted from DASS-42 to collect information from the respondents. Analysis was performed using the Spearman rank correlation test.

Results: Most productive-age respondents during the COVID-19 pandemic at Banjarnegara 2 PHC had moderate stress levels (41.5%), followed by normal high hypertension (38.5%). Spearman rank correlation test showed a significant relationship between stress levels and the incidence of hypertension in productive age during the COVID-19 pandemic in the region Banjarnegara 2 PHC with a p-value of 0.000 ($p < 0.05$). This result showed a positive and robust correlation of 0.743.

Conclusion: Stress levels were associated with the incidence of hypertension in productive age during the COVID-19 pandemic in the Banjarnegara 2 Public Health Center.

Abstrak:

Latar belakang: Hipertensi merupakan masalah kesehatan global dengan prevalensi kasus yang tinggi terutama pada usia produktif. Selama pandemi COVID-19, terjadi peningkatan kasus komorbid, termasuk hipertensi. Meningkatnya pandemi COVID-19 telah menimbulkan gejala, penyakit fisik dan psikis. Salah satu faktor risiko hipertensi adalah stres. Penelitian ini bertujuan untuk mengetahui hubungan antara tingkat stres dengan kejadian hipertensi pada masa pandemi COVID-19 di wilayah Puskesmas Banjarnegara 2.

Metode: Penelitian ini menggunakan pendekatan observasional analitik dengan cross-sectional. Sebanyak 65 responden terlibat dalam penelitian ini yang dipilih dengan menggunakan purposive sampling. Responden adalah orang dengan hipertensi yang tercatat pada program PROLANIS di Puskesmas Banjarnegara 2 periode Januari-Februari 2022. Seperangkat kuesioner yang sudah diuji sebelumnya diadopsi dari DASS-42 untuk mengumpulkan informasi dari responden. Analisis dilakukan dengan menggunakan uji korelasi rank Spearman.

Hasil: Sebagian besar responden pada penelitian mengalami tingkat stres sedang (41,5%), diikuti hipertensi normal tinggi (38,5%). Uji korelasi rank

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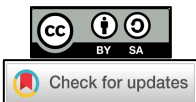
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Spearman menunjukkan adanya hubungan yang bermakna antara tingkat stres dengan kejadian hipertensi pada usia produktif pada masa pandemi [COVID-19](#) di wilayah kerja Puskesmas Banjarnegara 2 dengan p-value 0,000 ($p < 0,05$). Hasil [penelitian](#) ini menunjukkan korelasi yang positif dan kuat sebesar 0,743. **Kesimpulan:** Tingkat stres berhubungan dengan kejadian hipertensi pada usia produktif pada masa pandemi [COVID-19](#) Puskesmas Banjarnegara 2

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INTRODUCTION

The spread of the COVID-19 pandemic has been designated as a national disaster in Indonesia since April 13, 2020, through the Presidential Decree of the Republic of Indonesia Number 12 of 2020. According to daily data from the Indonesian Ministry of Health, the positive number of COVID-19 in Indonesia has reached 5,968,405 cases, and the death toll has reached 153,738 people as of March 20, 2022. The escalating COVID-19 pandemic is causing physical and psychological symptoms and illnesses. During the COVID-19 pandemic, there was an increase in comorbid cases, including hypertension [1] Hypertension is a condition with increased arterial blood pressure [2].

The World Health Organization (WHO) said that the incidence rate of hypertension in the world is 22% of the total world population, and many are experienced by adult age, or productive age (20-60 years)[3]. Currently, people with hypertension tend to be higher in productive age compared to the elderly [4]. While in Indonesia, the prevalence of hypertension in the ≥18 years population in 2018 had increased by 34.1% compared to 2013 25.8% [5], [6]. In 2018, hypertension in Central Java Province was 38.80%, meaning that this province has a prevalence rate above the national average (32%)[7]. According to the Banjarnegara district profile year 2021, this district was one of the districts in Central Java with an incidence rate of hypertension of 325,625. Hypertension occupied the first position of the top 10 diseases in the Banjarnegara District Health Center in 2021 [8].

The high prevalence rate of hypertension can be influenced by several factors, one of which is stress [9]. Stress affects the increase in high blood pressure because stress is an unpleasant physical and psychological pressure, which can stimulate the child's adrenal to release the hormone adrenaline and spur the heart to beat faster and more robustly, impacting the blood pressure increase. Stress can affect a person's

intrapersonal and interpersonal conditions; depression, stress, and anxiety are associated with increased life satisfaction. During a COVID-19 pandemic, a person will be vulnerable to stress, depression, and anxiety about COVID-19 and then experience decreased satisfaction in their life [10]. In addition, the COVID-19 pandemic makes respondents experience stress, anxiety, and depression due to restrictions on activities and activities outside the home [11].

The COVID-19 pandemic can also affect Mental and Emotional Disorders (MED). People generally felt anxiety, rejection, anger, fear, depressive symptoms, and stress [13]. According to psychosocial health data in Indonesia, there were 1,595 people recorded using health and psychosocial support services on March 24 to April 24, 2020. They used this health service to solve problems of panic, fear, anxiety, stress, or depression during the COVID-19 pandemic [14].

Meanwhile, based on information from Banjarnegara District health profile data on cases of people with Mental Emotional Disorders (MED) during the COVID-19 pandemic in 2021, it shows that Banjarnegara District ranks 8th in MED cases with 145 people. Our preliminary study at the Banjarnegara 2 Health Center found that the number of people participating in the Chronic Disease Management Program called *Prolanis* activities in January – February 2022 was as many as 180 survivors. Of these, it was found that people suffering from hypertension amounted to 118 of productive age (20-60 years) and the remaining 62 patients with hypertension with complications. Based on the results of interviews with PHC officers, it was known that the prevalence of new cases of hypertension averages 2-5 cases every month. New cases of hypertension can be established if the patient's blood pressure remains high in the range of 140/90 mmHg after checking blood pressure at least twice in a period of two to three weeks in the

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Primary Health Centre (PHC) or called as Puskesmas in local language.

The results of interviews with five respondents of productive age (20-60) years who came to the PHC found that three people with hypertension approximately one year ago said during the COVID-19 pandemic, they experienced complaints such as dizziness, insomnia, feeling tired, easily emotional, and irritable. This shows that 3 out of 5 respondents experienced signs of hypertension symptoms during the COVID-19 pandemic. Considering all backgrounds, we are interested in understanding the relationship between stress levels and the incidence of hypertension during a COVID-19 pandemic in the Banjarnegara 2 PHC.

RESEARCH METHOD

This was quantitative observational analytical research using a cross-sectional design. The population in this study was patients with hypertension recorded in the medical record of PROLANIS Banjarnegara 2 PHC in January – February 2022, which amounted to 180 people. The sample size calculation employed the Slovin formula that obtained 65 respondents. We selected the sample using purposive sampling using inclusion criteria: aged 20–60 and patients with hypertension without complications.

We used the DASS-42 (Depression Anxiety Stress Scale 42) as our instrument to measure stress levels and health center medical record data. This questionnaire was pre-tested for validity and reliability tests before data collection due to modification of the items due to the COVID-19 pandemic. The result of validity and validity was (r = 0.355) and the p-value (p < 0.05), meaning the instrument was valid. While for reliability, we found Cronbach's Alpha value, r = 0.864, meaning that our instrument was classified as highly reliable. Two variables were assessed in this study, 1) the independent variable, namely the stress level, and 2) the dependent variable, namely the incidence of hypertension. Analysis was done using the Spearman rank test.

This research was approved by the Department of Public Health, Universitas Ahmad Dahlan. A research permit was requested from the local health authorities.

RESULTS AND ANALYSIS

1. Characteristic Respondent

A total of 65 people participated in this study. Among them, more than 50% were women (56.92%). Most respondents aged between 45-60 years (84.62%). Most respondents experienced moderate stress (41.5%), followed by mild stress (32.3%). We found most of our respondents in the normal High hypertension category (38.5%) [Table 1].

Table 1. Characteristics of the participants in this study in Banjarnegara Health Center Area 2

	Variable	Frequency n (%)
Sex	Male	28 (43.08)
	Female	37 (56.92)
Age (year)	30-44	10 (15.38)
	45-60	55 (84.62)
Stress Level (DASS score)	Normal (0-14)	10 (15.28)
	Mild (15-18)	21 (32.31)
	Moderate (19-25)	27 (41.54)
	Heavy (26-33)	7 (10.77)
	Very Heavy (≥ 34)	0 (0)
History of Hypertension	Normal	15 (23.08)
	Hypertension	
	Normal Hight	25 (38.46)
	Hypertension Grade 1	17 (26.15)
	Hypertension Grade 2	8 (12.31)
	Hypertension	

2. Relationships Among the Variable Assessed

Spearman ranks statistical test results show a correlation coefficient value was 0.743 with p-value = 0.000 (p<0.05), meaning there was a relationship between stress levels and the incidence of hypertension in productive age during a pandemic in the Banjarnegara 2 PHC (Table 2).

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Table 2. Relationship between Stress Level and the Incidence of Hypertension in Productive Age during a COVID-19 Pandemic in the Banjarnegara 2 PHC

Level Stress and score	Incidence of hypertension				Correlation (r)
	Normal	Normal High	Level 1	Level 2	
Normal (0-14)	9 (13.8)	1 (1.5)	0 (0)	0 (0)	0.743 (p-value 0.00)
Mild (15-18)	5 (7.7)	14 (21.5)	1 (1.5)	1 (1.5)	
Moderate (19-25)	1 (1.5)	9 (13.8)	15 (23.1)	2 (7.4)	
Heavy (26-33)	0 (0)	1 (1.5)	1 (1.5)	5 (7.7)	

2. Discussion

Hypertension is a degenerative disease currently a big problem in the world, mainly because this disease does not occur directly but gradually over a long time, so sufferers ignore the symptoms [15]. Hypertension is currently a problem in all regions of Indonesia, especially in the population aged 30 years and over. As mentioned earlier, hypertension is one of the top 10 diseases in Banjarnegara District. So, this study chose Banjarnegara 2 PHC as a case study of this disease, especially during the COVID-19 pandemic. This is because, during the COVID-19 pandemic, psychological disorders occurred due to being infected with COVID-19 itself because of the stigma that occurred in the community or because of the inability to meet the needs of life during the pandemic, which resulted in psychological disorders such as stress [16]–[20].

Our research found a strong correlation between stress and hypertension. This finding approved several types of research that were done before and during the COVID-19 pandemic [21]–[25]. Stress is the risk factor for hypertension due to the onset of the COVID-19 pandemic problem experienced by people with hypertension during the COVID-19 pandemic is an increase in blood pressure that worsens due to the impact of psychological pressure in the

form of stress [26]. Previous research stated that psychological pressure increases the risk of hypertension by 9% [27]. Stress is a feeling of burden when experiencing problems that each individual cannot overcome. In addition, this pandemic causes various changes that can cause psychological disorders, such as stress, which causes a person's immune system to decrease, affecting their vulnerability to COVID-19 infection.

Stress that causes hypertension can be caused by several reasons. According to previous research, stress can be caused by work, social isolation, marriage, economic conditions, and racial discrimination [28]. During the COVID-19 pandemic, the causes of stress that trigger hypertension apply, including work, social isolation, and economic conditions. During the COVID-19 pandemic, occupations became one of the stressors, and they felt insecure; this was because many business establishments could no longer employ employees because of its relation to the social restriction policy. This condition of job uncertainty is directly correlated with a person's economic situation; if he does not work, his financial condition will decline. This is confirmed by previous research, which says that COVID-19 harms employees [29].

Meanwhile, social isolation is common in the community when COVID-19 occurs. This causes both COVID-19 sufferers and their families to feel stressed because the source of the infection stigmatizes them, then shunned, and they cannot carry out their usual activities [20]. This stress increases a person's blood pressure, especially in someone with a previous history.

CONCLUSION

Stress levels were associated with the incidence of hypertension in productive age during the COVID-19 pandemic in the Banjarnegara 2 Public Health Center. Based on the results, we suggest further research to find out more about why someone feels

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stress, as stated earlier, whether it is related to work, income, or other reasons. It is [also](#) essential to formulate program solutions according to the actual situation that occurs.

ACKNOWLEDGEMENTS

The researcher would like to thank all of the Banjarnegara 2 [Public](#) Health Center staff and study participants.

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STRESS LEVELS AND INCIDENCE OF HYPERTENSION IN PRODUCTIVE AGE DURING COVID-19 PANDEMIC IN BANJARNEGARA 2 PUBLIC HEALTH CENTRE

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ABSTRAK

Article History:

Submitted: 06/05/2023
Accepted: 19/02/2024
Published: 15/03/2024

Keywords:

COVID-19;
Stress;
Hypertension;
Pandemic

Abstract:

Hypertension is a world public health problem with a high prevalence of cases, especially in productive age. During the COVID-19 pandemic, there was an increase in comorbid cases, including hypertension, due to lack of physical activity and psychological illnesses. One of the risk factors for hypertension is stress. This study aimed to determine the relationship between stress and the incidence of hypertension in the Banjarnegara 2 Health Center during the pandemic. This study used a cross-sectional design. As many as 65 participants were involved in this study that were selected using purposive sampling. A set of pre-tested questionnaires was adopted from DASS-42 to collect information from the respondents. Analysis was done using the Spearman rank correlation test. Most productive-age respondents during the pandemic at Puskesmas Banjarnegara 2 had moderate stress levels (41.5%), followed by normal high hypertension (38.5%). Spearman rank correlation test showed a significant relationship between stress levels and the incidence of hypertension in productive age during the pandemic in the region Puskesmas Banjarnegara 2 with a p-value of 0.000 ($p < 0.05$). This result showed a positive and robust correlation of 0.743, meaning that stress levels were associated with the incidence of hypertension in productive age during the pandemic.

Abstrak:

Hipertensi merupakan masalah kesehatan global dengan prevalensi kasus yang tinggi terutama pada usia produktif. Selama pandemi COVID-19, terjadi peningkatan kasus komorbid, termasuk hipertensi karena kurangnya aktivitas fisik dan gangguan psikologis. Salah satu faktor risiko hipertensi adalah stres. Penelitian ini bertujuan untuk mengetahui hubungan antara tingkat stres dengan kejadian hipertensi pada masa pandemi di wilayah Puskesmas Banjarnegara 2. Penelitian ini menggunakan pendekatan desain cross-sectional. Sebanyak 65 partisipan terlibat dalam penelitian ini yang dipilih dengan menggunakan purposive sampling. Sebuah set kuesioner diadopsi dari DASS-42 dan dites sebelumnya digunakan untuk mengumpulkan informasi dari responden. Analisis dilakukan dengan menggunakan uji korelasi rank Spearman. Hasilnya, sebagian besar responden pada penelitian mengalami tingkat stres sedang (41,5%), diikuti hipertensi normal tinggi (38,5%). Uji korelasi rank Spearman menunjukkan adanya hubungan yang bermakna antara tingkat stres dengan kejadian hipertensi pada usia produktif pada masa pandemi di wilayah kerja Puskesmas Banjarnegara 2 dengan p-value 0,000 ($p < 0,05$). Hasil ini menunjukkan korelasi yang positif dan kuat sebesar 0,743. Tingkat stres berhubungan dengan kejadian hipertensi pada usia produktif pada masa pandemi.



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How to Cite:

I.N. Arifah, S. Sulistyawati, "Stress Levels and Incidence of Hypertension in Productive Age During COVID-19 Pandemic in Banjarnegara 2 Public Health Centre", Indonesia. J. Heal. Sci., vol. 8, no. 1, pp. 124-129, 2024.

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The high prevalence rate of hypertension can be influenced by several factors, one of which is stress [9]. Stress affects the increase in high blood pressure because stress is an unpleasant physical and psychological pressure, which can stimulate the child's kidney glands to release the hormone adrenaline and spur the heart to beat faster and more robustly,

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Meanwhile, based on information from Banjarnegara District health profile data on cases of people with Mental Emotional Disorders (MED) during the COVID-19 pandemic in 2021, it shows that Banjarnegara District ranks 8th in MED cases with 145 people. Our preliminary study at the Banjarnegara 2 Health Center found that the number of people participating in the Chronic Disease Management Program called *Prolanis* activities in January – February 2022 was as many as 180 survivors. Of these, it was found that people suffering from hypertension amounted to 118 of productive age (20-60 years) and the remaining 62 patients with hypertension with complications. Based on the results of interviews with Puskesmas officers, it was known that the prevalence of new cases of hypertension averages 2-5 cases every month. New cases of hypertension can be established if the patient's blood pressure remains high in the range of 140/90 mmHg after checking blood pressure at least twice

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in a period of two to three weeks in the Primary Health Centre (Puskesmas).

The results of interviews with five respondents of productive age (20-60) years who came to the puskesmas found that three people with hypertension approximately one year ago said during the COVID-19 pandemic, they experienced complaints such as dizziness, insomnia, feeling tired, easily emotional, and irritable. This shows that 3 out of 5 respondents experienced signs of hypertension symptoms during the pandemic. Considering all backgrounds, we are interested in understanding the relationship between stress levels and the incidence of hypertension during a pandemic in the Puskesmas Banjarnegara 2.

RESEARCH METHOD

This was quantitative observational analytical research using a cross-sectional design. The population in this study was patients with hypertension recorded in the medical record of PROLANIS Puskesmas Banjarnegara 2 in January – February 2022, which amounted to 180 people. The sample size calculation employed the Slovin formula that obtained 65 respondents. We selected the sample using purposive sampling using inclusion criteria: aged 20–60 and patients with hypertension without complications.

We used the DASS-42 (Depression Anxiety Stress Scale 42) as our instrument to measure stress levels and health center medical record data. This questionnaire was pre-tested for validity and reliability tests before data collection due to modification of the items due to the COVID-19 pandemic. The result of validity and validity was ($r = 0.355$) and the p -value ($p < 0.05$), meaning the instrument was valid. While for reliability, we found Cronbach's Alpha value, $r = 0.864$, meaning that our instrument was classified as highly reliable. Two variables were assessed in this study, 1) the independent variable, namely the stress level, and 2) the dependent variable,

namely the incidence of hypertension. Analysis was done using the Spearman rank test.

This research was approved by the Department of Public Health, Universitas Ahmad Dahlan. A research permit was requested from the local health authorities.

RESULTS

1. Characteristic Respondent

A total of 65 people participated in this study. Among them, more than 50% were women (56.92%). Most respondents aged between 45-60 years (84.62%). Most respondents experienced moderate stress (41.5%), followed by mild stress (32.3%). We found most of our respondents in the normal High hypertension category (38.5%) [Table 1].

Table 1.
Characteristics of the participants in this study in Banjarnegara Health Center Area 2

Variable		Frequency n (%)
Sex	Male	28 (43.08)
	Female	37 (56.92)
Age (year)	30-44	10 (15.38)
	45-60	55 (84.62)
Stress Level (DASS score)	Normal (0-14)	10 (15.28)
	Mild (15-18)	21 (32.31)
	Moderate (19-25)	27 (41.54)
	Heavy (26-33)	7 (10.77)
	Very Heavy (≥ 34)	0 (0)
History of Hypertension	Normal	15 (23.08)
	Hypertension Normal Hight	25 (38.46)
	Hypertension Grade 1	17 (26.15)
	Hypertension Grade 2	8 (12.31)
	Hypertension	

2. Relationships Among the Variable Assessed

Spearman ranks statistical test results show a correlation coefficient value was 0.743 with p -value = 0.000 ($p < 0.05$), meaning there was a relationship between stress levels and the incidence of hypertension in productive age during a pandemic in the UPT Puskesmas Banjarnegara 2 (Table 2).

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Table 2.
Relationship between Stress Level and the Incidence of Hypertension in Productive Age during a Pandemic in the UPT Puskesmas Banjarnegara 2

Level Stress and score	Incidence of hypertension				Correlation (R)
	Normal	Normal High	Level 1	Level 2	
Normal (0-14)	9 (13.8)	1 (1.5)	0 (0)	0 (0)	0.743 (p-value 0.00)
Mild (15-18)	5 (7.7)	14 (21.5)	1 (1.5)	1 (1.5)	
Moderate (19-25)	1 (1.5)	9 (13.8)	15 (23.1)	2 (7.4)	
Heavy (26-33)	0 (0)	1 (1.5)	1 (1.5)	5 (7.7)	

DISCUSSION

Hypertension is a degenerative disease currently a big problem in the world, mainly because this disease does not occur directly but gradually over a long time, so sufferers ignore the symptoms [15]. Hypertension is currently a problem in all regions of Indonesia, especially in the population aged 30 years and over. As mentioned earlier, hypertension is one of the top 10 diseases in Banjarnegara District. So, this study chose PHC Banjarnegara 2 as a case study of this disease, especially during the COVID-19 pandemic. This is because, during the COVID-19 pandemic, psychological disorders occurred due to being infected with COVID-19 itself because of the stigma that occurred in the community or because of the inability to meet the needs of life during the pandemic, which resulted in psychological disorders such as stress [16]–[20].

Our research found a strong correlation between stress and hypertension. This finding approved several types of research that were done before and during the COVID-19 pandemic [21]–[25]. Stress is the risk factor for hypertension due to the onset of the COVID-19 pandemic problem experienced by people with hypertension during the COVID-19 pandemic is an increase in blood pressure that worsens due to the impact of psychological pressure in

the form of stress [26]. Previous research stated that psychological pressure increases the risk of hypertension by 9% [27]. Stress is a feeling of burden when experiencing problems that each individual cannot overcome. In addition, this pandemic causes various changes that can cause psychological disorders, such as stress, which causes a person's immune system to decrease, affecting their vulnerability to COVID-19 infection.

Stress that causes hypertension can be caused by several reasons. According to previous research, stress can be caused by work, social isolation, marriage, economic conditions, and racial discrimination [28]. During the COVID-19 pandemic, the causes of stress that trigger hypertension apply, including work, social isolation, and economic conditions. During the COVID-19 pandemic, occupations became one of the stressors, and they felt insecure; this was because many business establishments could no longer employ employees because of its relation to the social restriction policy. This condition of job uncertainty is directly correlated with a person's economic situation; if he does not work, his financial condition will decline. This is confirmed by previous research, which says that COVID-19 harms employees [29].

Meanwhile, social isolation is common in the community when COVID-19 occurs. This causes both COVID-19 sufferers and their families to feel stressed because the source of the infection stigmatizes them, then shunned, and they cannot carry out their usual activities [20]. This stress increases a person's blood pressure, especially in someone with a previous history.

CONCLUSION

Based on the results of our research, we suggest further research to find out more about why someone feels stress, as stated earlier, whether it is related to work, income, or other reasons. It is essential to formulate program solutions according to the actual situation that occurs.

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ACKNOWLEDGEMENTS

The researcher would like to thank all the Banjarnegara 2 Health Center staff and study participants.

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