

The Corelation Between Stress Levels And Incidence of Hypertension Among Tobacco Farmers Who Experienced Crop Failure In Subdistrict of Pakusari, Jember Regency

Mulia Hakam¹, Erti I Dewi², Mufreda Yuliana Indrian³

^{1,2,3} Faculty of Nursing, Universitas Jember

Jln. Kalimantan No. 37 Kampus tegal Boto Jember

E-mail : muliahakam81@gmail.com

ABSTRACT

Introduction

Uncertain climate could cause crop failure among tobacco farmers lead to long term stress resulting in cardiovascular system disorder including hypertension. The study aimed to analyze the correlation of stress level with hypertension prevalance among tobacco farmers who experienced crop failure.

Methods

The method of the research was a cross sectional study involving 98 Respondents. Tobacco farmers experiencing crop failure in Subdistrict of Pakusari, Jember Regency were determined as sample which was recruited using cluster sampling technique. Data were collected using Depression Anxiety Stress Scale (DASS) questionnaire for identifying the stress level. Measurement of blood pressure waa carried out using stethoscope and sphygmomanometer. The data were analyzed using Chi Square test.

Results

The results of the research with Chi Square test showed stress level with systole blood pressure ($x^2=0,584$; p-value > 0,05) and diastole ($x^2=0,905$; p-value > 0,05).

Conclution

The research indicated that no correlation between stress level and the incidence of hypertension in the group of tabacco farmers who experienced crop failure. This is because some farmers only plant part of their land so that the crop failure condition has not burdening them. Prehypertension in farmers should always be monitored properly to improve health status.

Keywords

Stress; Hypertension; Farmer; Agricultutre

BACKGROUND

Climate change occurring in Indonesia is very influential on the productivity and quality of agricultural products, both food commodities and horticultural commodities [1]. Climate change is also very influential on tobacco productivity [1]. Tobacco plants will experience a decrease in productivity due to rain in wrong time which causes the condition of many leaves are damaged

[1]. The decrease in the quantity and quality of tobacco will certainly result in declining the crop result that can lead to crop failure [2]. This makes the workload of farmers become increasingly high in agricultural productivity that affects the occurrence of stress and being able to lead to a higher cardiorespiration system that affects the rise in blood pressure [3].

Hypertension is a condition of blood pressure in blood vessels that are chronically elevated [4]. Hypertension occurs because the heart works harder to pump blood for the fulfillment of oxygen and nutritional needs of the body in which if it is left, it will disrupt the function of other organs such as heart and kidney [4]. Hypertension according to Joint National Committee (JNC) VII 2003 which occurred in population aged 18 years which states that systolic blood pressure was 140 mmHg and diastolic blood pressure was 90 mmHg [4].

Stress is a non-specific demand in which an individual is required to respond and perform an action [5]. Stress is the human response to any change that is perceived as a challenge or threat [6]. Stress experienced by farmers is an imbalance between the business and the results obtained where it is a threat [7].

Based on the description of the problem and background above, this study aimed to analyze the relationship of stress levels with hypertensive occurrence in the group of tobacco farmers who experienced crop failure in Pakusari district, Jember.

METHODS

The research design was observational analytic using cross sectional study method. The population of this study were tobacco farmers who experienced crop failure as many as 4,303 people. The technique used was probability sampling using cluster sampling by taking 2 villages from 7 villages, Subo and Patemon Village. Subo Village has 6 groups of farmers and Patemon Village has 4 groups, while Pakusari District has 43 groups of tobacco farmers. with the total sample about 98 people. The research data was obtained from the Depression Anxiety Stress Questionnaire (DASS) and blood pressure measurement tool with *stethoscope riester and OneMed mercury sphygmomanometer*. The data processing used *Chi Square test with significance level of ($\alpha = 0,05$)*.

RESULT

Respondent Characteristics

Table 1. Characteristics of Respondents by Age, length of work, Sex and Education Level

Variables	n (%)
Age (Years) (<i>mean ± SD</i>)	46 ± 10,63
Length of Work (Years) (<i>mean ± SD</i>)	22,95 ± 10,78
Sex	

Male	69 (70,4)
Female	29 (29,6)
Total	98 (100)
Education Level	
No school	6 (6,1)
Elementary School	46 (26,9)
Junior High School	16 (16,3)
Senior High School	24 (24,5)
College	6 (6,1)
Total	98 (100)

Based on Table 1 it showed that the average age of farmers was 46 years old and the average length of tobacco farmers work in Pakusari district Jember was 22.95 years. The most gender in farmers is men and the highest level of education is elementary school education.

The Stress Level of Tobacco Farmer Group

Table 2. The Average Score of Stress Levels on Farmer Groups Experiencing Crop Failure

Variable	Mean ± SD
Stress Level	19,38 ± 7,31

Table 2 showed that the average score of farmers' stress level who experienced crop failure was 19.38 with standard deviation of 7.31. This stress level corresponded to the stress level according to Lovibond in 1995 that there are normal, mild, moderate, severe and very severe stress levels that can be seen in table 3.

Table 3. Distribution of Stress Levels In Tobacco Farmer Group Who Experienced Crop Failure

Variables	n	Percentage (%)
Stress Level		
Normal	24	24,5
Mild	22	22,4
Moderate	31	31,6
Severe	20	20,4
Very Severe	1	1,0
Total	98	100

Table 3 showed that the farmers who experienced crop failure suffered from normal stress as many as 24 people (24.5%), mild stress as many as 22 people (22.4%), moderate stress 31 people (31.6%), heavy stress 20 people (20, 4%) and very heavy stress 1 person (1%).

Table 4. The Average Scores of Stress Level Indicators At Tobacco Farmer Group Who Experienced Crop Failure

Variables	Mean ± SD
-----------	-----------

Physical Symptoms	5,98 ± 2,479
Psychological Symptoms	6,73 ± 3,375
Symptoms of Behavior	6,66 ± 2,532

Table 4 showed that the indicator of stress level in the form of physical symptoms had average of 5.98 with standard deviation of 2,479, the average of psychological symptoms was 6.73 with standard deviation of 3.375, and the average of behavioral symptoms was 6.66 with standard deviation of 2,532.

Hypertension At Tobacco Farmers Group

Table 5. The Average Score of Hypertension in Tobacco Farmers who experienced crop failure

Variables	Median; Percentil (P ₂₅ – P ₇₅)
Sistol	120; 110-140
Diastol	80; 80-90

Table 5 showed that the systolic blood pressure has a mean value of 120 mmHg with a percentile value of P₂₅ being 110 mmHg and a value of P₇₅ 140 mmHg. Diastolic blood pressure showed the middle score was 80 mmHg with a percentile value of P₂₅ 80 mmHg and a value of P₇₅ 90 mmHg. This blood pressure is in accordance with JNC VII 2003 which mentions that there is normal blood pressure, prehypertension, stage I hypertension and hypertension stage II which can be seen in table 6.

Table 6. Hypertension Distribution In Tobacco Farmer Group Who Experienced Crop Failure

Variabel	n	Percentase (%)
Systole		
Normal	28	28,6
Prehypertension	39	39,8
Hypertension of Stage 1	21	21,4
Hypertension of Stage 2	10	10,2
Total	98	100
Diastole		
Normal	10	10,2
Prehypertension	42	42,9
Hypertension of Stage 1	29	29,6
Hypertension of Stage 2	17	17,3
Total	98	100

Table 6 showed that the farmer's incidence of hypertension at normal systolic pressure was 28 people (28.6%), prehypertension 39 people (39.8%), stage 1 hypertension 21 people (21.4%), and stage 2 hypertension 10 (10,2%), whereas at normal diastolic pressure there were 10 people

(10,2%), prehypertension 42 people (42,9%), stage 1 hypertension 29 people (29,6), and stage 2 hypertension 17 people (17.3%).

Analysis of Stress Level Relationship with Hypertension Occurrence in Tobacco Farmer Group

Table 7. Results of Stress Level Relation Analysis with Hypertension Occurrence in Tobacco Farmer Group At Systole

Stress	TD Systole								p value
	Normal		Prehypertension		Hypertension Stage I dan II		Total		
	N	%	N	%	N	%	N	%	
Normal	10	10,2	8	8,2	6	6,1	24	24,5	0,584
Mild	6	6,1	9	9,2	7	7,1	22	22,4	
Moderate	9	9,2	11	11,2	11	11,2	31	31,6	
Severe and Very Severe	3	3,1	11	11,2	7	7,1	21	21,4	
Total	28	28,6	39	39,8	31	31,6	98	100	

Table 8. The Relationship Analysis of Stress Levels with Hypertension Occurrence in Tobacco Farmers Group In Diastole

Stres	TD Dyastole								p value
	Normal		Prehypertension		Hypertension Stage I dan II		Total		
	N	%	N	%	N	%	N	%	
Normal	3	3,1	10	10,2	11	11,2	24	24,5	0,905
Mild	2	2,0	9	9,2	11	11,2	22	22,4	
Moderate	3	3,1	16	16,3	12	12,2	31	31,6	
Severe and Very Severe	2	2,0	7	7,1	12	12,2	21	21,4	
Total	10	10,2	42	42,9	46	46,9	98	100	

Based on table 7 and table 8, the stress category on severe and very severe level, include the hypertension category on stage I and stage II of level hypertension was margered. Because the Chi Square test is used when no cell has an expected value of less than five (Dahlan, 2014). The researcher did the cell combining and showed 0 cell result (0%) with the expected value less than five. The result showed that p value > alpha value (0,05) indicated that there was no correlation between stress level and hypertension incidence in group of tobacco farmers who experienced crop failure in Pakusari district, Jember.

DISCUSSION

Respondent Characteristics

The results showed that the average age of tobacco farmers group in Pakusari district of Jember was 46 years old. The more someone's age increases, the higher risk of hypertension will also increase. It happened because in the middle adult age about over 40 years large arteries lose flexibility and become stiff so that blood is forced to go through a narrower blood vessel than usual and increase blood pressure [8]. Researchers believe that hypertension that occurs due to age factor, where the elderly age is not always experienced hypertension but in adulthood was already many people who experienced hypertension.

The prevalence of hypertension in this study was dominated by men as many as 69 people (70.4%). Basically a male lifestyle such as smoking and consuming alcohol can increase blood pressure if his lifestyle does not change [9]. Men who smoked the most were those who worked informally ie one farmer / fisherman / laborer [10]. The unhealthy lifestyle of farmers is reinforced in previous studies that say smoking, consuming high-fat and salt foods will be at risk of developing hypertension [3]. Researchers argue that male is at high risk of hypertension compared to female, it is because men's lifestyle such as smoking and men's work pressure is higher than women.

The level of education from the results showed that most groups of tobacco farmers in Pakusari Jember is in elementary level only. A person with a low level of education and knowledge will have an impact on health care that tends not to understand primarily on blood pressure associated with the incidence of hypertension [11]. This is in accordance with previous research says that education that most of them are only in elementary level that fall into low-level education that can lead to hypertension [12]. The level of education in a person will affect his ability to receive information and process it before it becomes a good or bad behavior that can impact on the health status of a person [13]. A person's higher education will be easier to receive information and will also get a lot of knowledge, on the contrary if someone's knowledge is low it will hinder the development of attitudes in receiving information so that knowledge is not enough [13]. Researchers argue that education is very important in improving health status, especially if it is higher education then knowledge about health is wider so as to keep themselves especially with the incidence of hypertension.

The results of research on the length of work characteristics showed that the average length of working for tobacco farmers was 22.95 years. In a previous study, it was found that the duration of work is one of the risk factors for the increased blood pressure where workers who work more than 10 years have a risk of increased systolic blood 2,150 times and diastolic increase of 1,737 times [14]. Researchers argue that the length of work with the duration of exposure to pesticides with farming activities ranging from farming to selling agricultural produce can cause high blood pressure.

Stress Level

The results showed that the stress level experienced by the tobacco farmer group was normal stress 24 people (24,5%), mild stress 22 people (22,4%), moderate stress 31 people (31,6%),

severe stress 20 people (20.4%), and very severe stress 1 person (1%). Based on these results, farmers experiencing the most stress is the level of moderate stress as many as 31 people (31.6%). The results also showed symptoms of stress experienced by most of the psychological symptoms with an average of 6.73 followed by the average behavioral symptoms of 6.66 and physical symptoms of 5.98.

This study is similar to previous research which states that most of farmers experienced moderate stress as many as 37 people [15]. This stress occurs in a person due to a work load [16]. The workload and job stress that occur in farmers is due to job demands in agricultural productivity from farming, harvesting and selling agricultural products [3]. It is directly related to the environmental conditions of climate, so that uncertain climate change can decrease the productivity of tobacco plants [1]. The decrease in productivity can lead to crop failure in farmers and can cause stress due to crop failure [2]. Researchers argue that the burden of farmer work can arise due to job demands and uncertain climate change. Uncertain climate change can lead to decreased agricultural productivity and crop failure. This crop failure who can make farmers experiencing stress.

Hypertension

The results showed that farmers had normal systolic blood pressure of 28 people (28.6%), prehypertension 39 people (39.8%), stage 1 hypertension 21 people (21.4%) and stage 2 hypertension 10 people (10.2%). In normal diastolic blood pressure there were 10 people (10,2%), prehypertension 42 people (42,9%), stage 1 hypertension 29 people (29,6%) and stage 2 hypertension 17 people (17,3%) . Based on research result most of farmer's blood pressure is good prehypertension both in systolic blood pressure and diastole.

This study is in accordance with previous research that says that most people suffer from prehypertension in productive age [17]. Increased blood pressure can be due to work load and work stress experienced by job demands from farming, harvesting, and selling agricultural products [3]. The workload of farmers is directly affected by the uncertain climate change [1]. Climate change will reduce agricultural productivity and can lead to crop failures that cause stress to farmers [2]. Stress that occurs along with the workload of farmers due to erratic climate changes resulted in the cardiorespiration system work and increase the blood pressure [3]. Hypertension problems that occur in farmers can also be caused by unhealthy lifestyles such as smoking, eating foods high in fat and salt [3]. Researchers argue that farmers who do the work from farming to selling agricultural products have a workload and job stress. Workload and job stress can make the system of farmers' cardiorespiration to be increased so as to cause increased blood pressure in farmers.

Analysis of Stress Level Relationship with Hypertension Occurrence in Tobacco Farmer Group Who Experienced Crop Failure

Based on the results of research that analyzed the relationship of stress level with the incidence of hypertension in the group of tobacco farmers in Pakusari Jember showed that there was no relationship with the value of p at systolic blood pressure is 0.584 and diastol 0.905. The results of this study were consistent with previous studies showing that there was no significant

relationship between stress and the incidence of hypertension in adults [18]. This study is also in accordance with other studies stating that stress is not related to blood pressure [17]. This happens because the stress experienced has passed, then the blood pressure will usually return to normal because the blood pressure is classified as prehypertension included in the blood pressure which is still controlled [19].

The results of this study were different from other studies that discuss stress with the incidence of hypertension stating that there is a relationship between stress with the incidence of hypertension [20]. The result of the research differs from previous research because some factors such as farmers planting tobacco plants only part of the land. Farmers planted part of the land according to the theory that in stress management can be influenced by individual coping mechanism. one of them is adaptive coping mechanism [19]. Adaptive coping mechanisms that are problem-focused mechanisms include attempts to improve a given situation by making changes [19]. These changes cause work stress and workload of farmers is not too increased, so it does not give too much psychological pressure and ultimately no impact on the incidence of heavier hypertension [21].

Based on the theory and the results of the research, the researchers argue that the incidence of hypertension in the group of tobacco farmers who experienced crop failure is not necessarily due to stress. Stress of tobacco farmers is included in the medium level with prehypertension where it is still classified as levels of stress and blood pressure which are controlled. This can happen because farmers make changes in the way of farming is by planting some land to overcome in case of crop failure again, so that if someone losses he will not lose many.

CONCLUSIONS

There was no significant correlation between stress level and hypertension incidence in tobacco farmer group that experienced crop failure in Pakusari, Jember.

This research can be an input for educational institutions to add insight and as a reference in further research. Health services can manage stress by increasing immune stress such as positive thinking toward attitudes, beliefs and thoughts. Tobacco farmers' groups are more aware of ways to prevent stress that affects hypertension from crop failure by improving health status. In addition, for further investigators it is desirable to conduct a research with retrospective research designs on other factors in tobacco farmer groups experiencing crop failure that may affect the occurrence of hypertension by using different sampling techniques and questionnaires designs as well, as well as blood pressure measuring instruments by using a digital measuring device provided that the battery must be in good condition.

REFERENCES

1. Herminingsih H. (2014). Hubungan adaptasi petani terhadap perubahan iklim dengan produktivitas tembakau pada lahan sawah dan tegalan di Kabupaten Jember. *JSEP*. 7(2): 31-44
2. Aliyah N, Sobirin, Handayani T. (2013). Dampak penyimpangan curah hujan terhadap pendapatan petani tembakau di Kabupaten Temanggung. Jakarta: FMIPA UI;
3. Susanto T, Purwandari R, Wuryaningsih EW. (2016). Model kesehatan keselamatan kerja berbasis agricultural nursing: studi analisis masalah kesehatan petani. *Jurnal Ners*. 11(1): 45-50
4. Kementerian Kesehatan RI. (2013). Riset kesehatan dasar:riskesdas 2013. Jakarta: Badan Penelitian dan Pengembangan Kesehatan;
5. Potter & Perry. (2005). Buku ajar fundamental keperawatan: Konsep, Proses dan Praktik. Edisi 4. Jakarta: EGC;
6. National Centre for Farmer Health. (2016). Managing stres on the farmer. Hamilton: National Centre for Farmer Health;
7. Huat Bin (Andy) A. (2010). Occupational stress among the new zealand farmers-a review. New Zealand: Auckland University of Technology;
8. Hartanti, MP, Mifbakhuddin. (2015). Beberapa faktor yang berhubungan dengan kejadian hipertensi pada petani. *Jurnal Kesehatan Masyarakat Indonesia*. 10(1): 30-37
9. Udjianti WJ. (2011). Keperawatan kardiovaskular. Jakarta: Salemba Medika;
10. Kementerian Kesehatan RI. (2010). Riset kesehatan dasar:riskesdas 2010. Jakarta: Badan Penelitian dan Pengembangan Kesehatan;
11. Widiansah HN, Wijayanti AC. (2016). Faktor-faktor yang berhubungan dengan kejadian hipertensi pada laki-laki usia dewasa muda di wilayah kerja Puskesmas Bulu Kabupaten Sukoharjo. Surakarta: Universitas Muhammadiyah Surakarta;
12. Safitri U, Relawati A. (2016). Hubungan perilaku manajemen stres terhadap tekanan darah ibu rumah tangga penderita hipertensi di Salemrejo. Yogyakarta: Universitas Muhammadiyah Yogyakarta;
13. Wahyuni, Eksanoto D. (2013). Hubungan tingkat pendidikan dan jenis kelamin dengan kejadian hipertensi di Kelurahan Jagalan di wilayah kerja Puskesmas Pucang Sawit Surakarta. *Jurnal Ilmu Keperawatan Indonesia*. 1(1): 112-121
14. Hastuti E, Setiani O, Nurjazuli. (2005). Faktor-faktor risiko kenaikan tekanan darah pada pekerja terpajan kebisingan di Bandara Ahmad Yani Semarang. *Jurnal Kesehatan Lingkungan Indones*. 4(2): 59-64
15. Windarsih AD, Suyamto, Devianto A. (2017). Hubungan antara stres dan tingkat sosial ekonomi terhadap hipertensi pada lansia. *Jurnal Keperawatan Notokusumo*. 5(1): 62-71
16. Sunaryo. (2013). Psikologi untuk keperawatan. Jakarta: EGC;
17. Fitriani N, Nilamsari N. (2017). Faktor-faktor yang berhubungan dengan tekanan darah pada pekerja shift dan pekerja non-shift di PT. X Gresik. *Journal of Industrial Hygiene and Occupational Health*. 2(1): 57-75

18. Ponto LW, Kandou GD, Mayulu N. (2016). Hubungan antara obesitas, konsumsi natrium, dan stres dengan kejadian hipertensi pada orang dewasa di Puskesmas Tompasso Kabupaten Minahasa. *Journal Health*. 4(2): 115-129
19. Ratnawati A, Hendarsih S, Pratiwi AI. (2017). Gaya hidup pada pasien hipertensi di wilayah kerja Puskesmas Wates Kabupaten Kulon Progo. *Jurnal Penelitian Kesehatan Suara Forikes*. 8(2): 82-86
20. Witasari E, Kadir Abd, Suhartatik. (2014). Hubungan antara stres dan pola makan dengan kejadian hipertensi pada pasien di Rumah Sakit Banua Mamase Kabupaten Mamase. *Jurnal Ilmiah Kesehatan Diagnosis*. 5(5): 574-579
21. Bahri S, Sugiyanto. (2014). Hubungan antara tingkat stres dengan kejadian hipertensi pada lansia di Panti Wherda Budi Dharma Yogyakarta. Yogyakarta: Sekolah Tinggi Ilmu Kesehatan 'Aisyiyah.