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FACTORS RELATED TO THE EVENT HYPERTENSION IN FARMERS

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ABSTRACT
Pesticides are materials that are widely used in various sectors, improper and correct use of pesticides can cause health problems where pesticides can cause hypertension because pesticides that enter the human body will be able to increase the enzyme acetylcholinesterase or Ache, so that there will be an accumulation reaction in the joints. Clinogenic neuro-effectors and autonomic ganglion which have an impact on the emergence of hypertension problems. The method in this research uses a quantitative research design with a cross-sectional analytical approach, the sampling technique in this research uses a total sampling technique from all workers totaling 17 respondents who work as farmers, the data collected is primary data and a univariate analysis test is carried out and bivariate analysis with Chi-square test to find relationships. The results of this research found that 64.7% of respondents experienced hypertension and 35.3% did not experience hypertension. Based on the data analysis carried out, it was found that the incidence of hypertension was significantly higher in the age group ≥ 30, working period ≥ 8years, longwork ≥ 8O'clock,smoking status is yes and PPE equipment is not good with a p value <0.05.

Keywords: farmers; hypertension; pesticides

INTRODUCTION

Indonesia is an agricultural country with people working in the agricultural sector reaching 28.23% of the total workforce. Agriculture is a field that plays an important role in meeting the needs of society and the national economy. Agricultural products are very diverse, including staple food sources, complementary food sources, and there are agricultural products in the form of ornamental plants or cut flowers. Obtaining good results certainly cannot be separated from the problems faced such as pests, diseases and weeds. One effort to increase agricultural productivity is to eradicate pests and plant diseases using chemicals known as pesticides(Nikmah & TP, 2020)

Kayu Putih Village is located in Banjar District, Buleleng, a village that lives in harmony among lush trees and fresh mountain air. The villagers, most of the residents of Kayu Putih Village, depend on the results of rice farming for their livelihood. The residents of Kayu Putih Village cultivate the green rice fields with full dedication, using knowledge passed down from generation to generation to care for their plants. However, challenges inevitably arise, to fight pests and plant diseases, residents often use chemical pesticides.

According to(Dani Aulia Rahmasari & Musfirah, 2020), pesticides are substances that are widely used in various sectors, especially in the agricultural/plantation, forestry, fisheries and food agriculture sectors with a long period of use. The use of pesticides in the agricultural sector aims to help eliminate pest plants, fungi, insects, rodents and other organisms, thereby increasing agricultural production. Uncontrolled use of pesticides can affect environmental quality and can cause health problems for farmers. Health problems that can occur due to exposure to pesticides include poisoning and other diseases, one of which is hypertension. Pesticides can cause hypertension because pesticides that enter

the human body will be able to increase the enzyme acetylcholinesterase or Ache, so that an accumulation reaction will occur in the clinogenic junction of neuronal effectors and autonomic ganglion.

According to(Wiadi & Muliartha, 2017)states that Acetylcholine plays a role as a neurotransmitter in the sympathetic and parasympathetic ganglion. Acetylcholine will bind to nicotinic clinogenics, thereby causing inhibition of the sympathetic ganglion which will increase sympathetic stimulation with clinical manifestations of mydriasis and increased cardiac output. Increased cardiac output and increased peripheral pressure will increase blood pressure which causes hypertension. Based on research conducted by(Kusuma Dara Zulfania, Onny Setiani, 2017)stated that there was a significant relationship between history of pesticide exposure and blood pressure, and there was a relationship between years of work and farmers' blood pressure. Research conducted by(S. Nurkhayati, N. Nurjazuli, 2018)which stated that there were 26.7% of farmers who had abnormal diastolic blood pressure >90 mmHg.

There are various factors that can influence blood pressure to increase. Factors that can cause high blood pressure or hypertension can be analyzed using HL Blum's theory, that health status can be influenced by four main factors, namely environmental, behavioral, genetic and health service factors. Apart from these basic risk factors, one of the chemical environmental risk factors, namely toxic substances in pesticides, can also influence the course of new risk factors such as inflammation and oxidative stress in workers.(Hidayah, 2020). Environmental toxins can be considered an important risk factor for the onset of cardiovascular disease. One of the disorders of the cardiovascular system caused by short-term and long-term use of pesticides is an increase in blood pressure(Mayasari & Silaban, 2019).

Based on the results of a preliminary study conducted by the author on January 8 2024, 3 farmers belonging to the Sambong farmer group worked using organophosphate pesticides, insecticides and fungicides. When working, farmers do not appear to use PPE at all in their work, which would be very risky for farmers to be exposed to the risk of disease, one of which is suffering from hypertension. Based on the data presented above, the risk faced by farmers of contracting hypertension is quite large as a result of their work and is influenced by Due to several supporting factors, further research is therefore necessary. Assessing the risk of hypertension is very important in efforts to control morbidity and mortality due to hypertension in farmers, so this research is expected to be able to provide an overview of the incidence of hypertension in farmers. The purpose of the study was to find out what factors affect the incidence of hypertension in farmer groups in Kayu Putih Village.

METHOD

This research uses a quantitative research design with a cross-sectional analytical approach. This research was conducted by the Sambong Farmer group in Kayuputih Village, Banjar District, Bali in January 2024. The population in this research were rice field farmers. The sampling technique in this research used a total sampling technique from all farmers, including 17 farmers in the Tani Sambong group. The data collected was primary data with the measuring tools and methods used in this research were a personal identity questionnaire and a blood pressure meter to measure farmers' blood pressure. In this research, data analysis was carried out in the form of univariate analysis to describe the characteristics of the research and bivariate analysis by carrying out the Chi-square test to look for close relationships between the variables.

RESULT

Univariate analysis was carried out to determine the characteristics of respondents in the form of age, length of service, PPE smoking status and the distribution of hypertension incidents among respondents. The analysis results are displayed in the table below.

Table 1.
Characteristics of Respondents

Variable		%
Age		
< 30 years	6	35.3
≥ 30 years	11	64.7
Years of service		
< 8 years	7	41.2
≥ 8 years	10	58.8
Length of working		
< 8 hours	7	41.2
> 8 hours	10	58.8
Smoking Status		
Yes	12	70.6
No	5	29.4
PD equipment		
Good	9	52.9
Not enough	8	47.1

Characteristics of respondents based on age have an age range of 20-50 years, where the largest age range of respondents is aged ≥ 30 years, based on length of work the most respondents are with a period of work ≥ 8 years, based on length of work the largest number of respondents are with a period of work ≥ 8 hours, Based on smoking status, the majority of respondents were found to be on smoking status, 70.6%, while based on the completeness of the respondents' PPE, 47.1% of respondents at work did not use proper PPE.

Table 2.
Distribution of Hypertension Incidents

Hypertension	f	%
Yes	11	35.3
No	6	64.7

Based on the table above, it can be found that 64.7% of respondents experienced hypertension and 35.3% did not experience hypertension. Bivariate analysis was carried out for the relationship between MSD strength and work fatigue with internal factors such as age, length of service and nutritional status, while external factors included workload and hot work climate.

Table 3.
Relationship between respondent characteristics and the incidence of hypertension

Variable	Hypertension				*p-value*
	No		Yes		
	f	%	f	%	
Age					
< 30 years	4	66.67	2	33.3	0.042
≥ 30 years	2	18.2	9	81.8	
Years of service					
< 8 years	4	57.1	3	42.9	0.046
≥ 8 years	2	20.0	8	80.0	
Length of working					
< 8 hours	5	71.4	2	28.6	0.009
≥ 8 hours	1	10.0	9	90.0	
Smoking status					
No	2	40.0	3	60.0	0.039
Yes	4	33.3	8	66.7	
Using PPE					
Good	4	50.0	4	50.0	0.045
No	2	22.2	7	77.78	

The proportion of hypertension incidents was significantly higher in the age group ≥ 30yearwith p value = 0.042, years of service ≥ 8years with p value = 0.046, oldwork ≥ 8hours with p value = 0.009,respondents with smoking status were yes with a value of p = 0.039 and respondents used PPE poorly with a value of p = 0.045.

DISCUSSION

According to(Ekarini et al., 2020), increasing age is associated with endothelial dysfunction and increased arterial stiffness in hypertension, especially systolic hypertension in older adults. Furthermore, difficulties in treating hypertension generally occur in older adults due to the increased use of pharmacological drugs such as Non-Steroidal Anti-Inflammatory Drugs (NSID) and corticosteroids which can increase blood pressure. Based on the results of research conducted by the author, it shows that there is a significant relationship between age ≥ 30 years and the incidence of hypertension in farmers with a p value <0.05, the results of this study are in line with research conducted by(Hartanti, Marlinda & Mifbakhuddin, 2019), which stated that there was a significant relationship between age and the incidence of hypertension in rice farmers. The results showed that there was a significant relationship between age and the incidence of hypertension, with a value of p=0.000. The results of this study are also supported by the theory that as a person ages, the risk of developing hypertension is very large. This occurs because in old age the large arteries lose flexibility and become stiff so that blood is forced to pass through narrower blood vessels than usual and results in rising blood pressure.

According to research conducted by(Hidayah, 2020), work period is one of the factors that can influence exposure to pesticides entering a person's body, this is because the increasing number of years a person has been a farmer and using pesticides in every agricultural activity will cause a buildup of pesticide chemicals entering a person's body so that the longer a person works as a farmer can affect exposure to pesticides that enter the body. Based on the results of research conducted by the author, it shows that there is a significant relationship between working period ≥ 5 years and the incidence of hypertension in farmers with a p value <0.05, the results of this study are in line with research conducted by(Louisa et al., 2018)which states that work experience has a significant relationship with the incidence of hypertension in farmers.

Workers with long working hours are vulnerable to various types of health complaints, such as short sleep duration, fatigue, sleep disorders, hypertension and injury, workers with long working hours have a higher chance of experiencing health complaints, and short sleep duration has the greatest strong resistance to long working hours, which ultimately results in impaired health conditions(Ramadani, 2021). Based on the results of research conducted by the author, it shows that there is a significant relationship between working hours ≥ 8 hours and the incidence of hypertension with a p value <0.05, the results of this study are in line with research conducted by(Hamdie et al., 2020), where based on the results of the Spearman rank statistical test, the p-value was 0.048 < α 0.05 and the r value showed a result of 0.315, which means there is sufficient correlation between the variables. Based on the test results, it can be concluded that Ho is rejected, which means there is a significant relationship between length of work and the incidence of hypertension in workers.

(Asmara & Indarjo, 2022), states that the nicotine contained in cigarettes has a bad impact on a person's blood pressure because it causes the formation of atherosclerotic plaque, has a direct influence on the release of the hormones epinephrine and noradrenaline and causes the effect of CO (carbon monoxide) so that it binds to erythrocytes. Based on the results of research conducted by the author, it shows that there is a significant relationship between smoking status in the yes category and the incidence of hypertension with a p value <0.05, the results of this study are in line with research conducted by(Dwi Retnaningsih, Menik Kustriyani, 2017), where based on the results of bivariate analysis, it shows that there is a significant relationship between smoking behavior and the incidence of hypertension, p (0.000) <0.05, smoking behavior and the incidence of hypertension is due to many factors that can increase the incidence of hypertension besides smoking behavior.

Suma'mur (2014) PPE is equipment that must be used when working according to work hazards to maintain the safety of the worker himself and those around him, personal protective equipment does not eliminate or reduce existing dangers. This equipment simply reduces the amount of contact with the hazard by placing a barrier between the workforce and the hazard. The use of PPE by workers while working is an effort to avoid exposure to dangerous risks in the workplace.Based on the results of research conducted by the author, it shows that there is a significant relationship between the use of PPE and the incidence of hypertension with a p value <0.05, the results of this study are in line with research conducted by(Nikmah & TP, 2020), where the results of research on the relationship between completeness of PPE and the incidence of hypertension in flower spraying farmers in Kenteng Village, Bandungan District can be seen that the chi square test results obtained p-value = 0.036. These results indicate that there is a relationship between completeness of PPE and the incidence of hypertension in Kenteng Village, Bandungan District.

CONCLUSION

Based on the results of research that has been carried out, data was obtained that 64.7% of respondents experienced hypertension and 35.3% did not experience hypertension. Based on the data analysis carried out, it was found that the incidence of hypertension was significantly higher in the age group ≥ 30, working period ≥ 8years, longwork ≥ 8O'clock,smoking status is yes and PPE equipment is not good with a p value <0.05.

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