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Effect of Use of Personal Protective Equipment and Personal Hygiene on Hypertension Incidence in Farmers in Dolok District, North Padang Lawas Regency in 2022

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Abstract

The purpose of this study was to determine and analyze the effect of use of personal protective equipment and personal hygiene on hypertension incidence in farmers in Dolok District, North Padang Lawas Regency in 2022. This type of research was an analytical observational with a cross sectional design. The population in this study are farmers who spray pesticides when farming in Dolok District, North Padang Lawas Regency, totaling 9,250 people. This sampling used simple random sampling technique. The sample in this study was 96. This study used multivariate logistic regression analysis. The results showed that use of personal protective equipment and personal hygiene had an influence on hypertension incidence in farmers in Dolok District, North Padang Lawas Regency in 2022.

Keywords
protective equipment;
personal hygiene;
hypertension incidence

I. Introduction

Indonesia is an agricultural country with a population 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 the community and the national economy. Agricultural products are very diverse, including staple food sources, complementary food sources, and there are agricultural products. Good agricultural products certainly cannot be separated from the problems faced such as pests, diseases and weeds. One of the efforts to increase agricultural productivity is to eradicate pests and plant diseases using pesticides. Uncontrolled use of pesticides can affect the quality of the environment and can cause health problems for farmers.

The Indonesian population working in the agricultural sector is 38.23 million people (29.76%) of the total Indonesian population working 128.45 million people (Badan Pusat Statistik, 2020). The latest national pesticide use data according to data from the Pesticide Commission under the Ministry of Agriculture in 2020 shows a total of 4,380 registered types of pesticides. Pesticides are most widely used in horticultural crops, especially for vegetable crops (Hasibuan, 2015).

One way to increase optimal agricultural yields in the agricultural intensification package is to apply various technologies, including the use of agrochemicals (synthetic chemicals). The use of agrochemicals, was introduced on a large scale to replace old habits or technologies, both in terms of pest control and crop fertilization. The pattern of using agrochemicals, especially pesticides for some horticultural farmers is not controlled. Farmers tend to use pesticides not on the basis of indications for pest control, but they use a cover blanket system, namely the presence or absence of pests, plants are still sprayed with pesticides (Achmadi, 2018).

The use of pesticides in large doses and used continuously at planting time can result in several negative impacts such as pesticide residues that can accumulate in aquatic and agricultural products, pollution in the agricultural environment, reduced productivity, poisoning in animals, poisoning in humans which has a negative impact on the environment. his health. Farm workers are at risk for pesticide poisoning with negative impacts in the long term. The negative effects of pesticide exposure on farmer workers are no less numerous because they can cause various kinds of disturbances. This condition is related to their participation in agricultural activities, namely preparing equipment for spraying, spraying, mixing pesticides, cleaning equipment/clothes used when spraying, looking for pests, removing grass from plants, watering plants and harvesting.

The uncontrolled use of pesticides will result in the health of the farmers themselves and the environment in general. Several studies on workers or residents who have a history of pesticide contact have been carried out a lot. From these various studies, a description of the prevalence of moderate to severe poisoning caused by work is obtained, which is between 8.5% to 50%. Thus, it can be estimated that the prevalence of moderate poisoning rates among farmers can reach tens of millions during the spraying season (Achmadi, 2018).

One of the impacts of pesticide exposure is hypertension, which is a condition that can lead to various health complications that can endanger lives while increasing the risk of heart disease, stroke, and even death. Blood pressure can be defined as the force exerted by circulating blood on the walls of the body's arteries, which are the main blood vessels in the body. The amount of this pressure depends on the resistance of the blood vessels and how hard the heart is working. The more blood pumped by the heart and the narrower the arteries, the higher the blood pressure (Aulawi, 2018).

In Indonesia, according to data from the 2018 Basic Health Research, the prevalence of hypertension in those aged over 18 years diagnosed by health workers was 9.4%, while those taking hypertension medication were 9.5%. So there are 0.1% of the population who have never been diagnosed with hypertension by health workers but take 2 hypertension drugs. The prevalence of hypertension in Indonesia obtained through measurements at the age of more than 18 years was 34.11%, the highest prevalence was in South Kalimantan at 44.13% followed by West Java at 39.60%, East Kalimantan at 39.30% and West Kalimantan at 29, 4%. The prevalence of hypertension in North Sumatra Province reaches 6.7% of the total population in North Sumatra, based on data from the Health Research and Development Agency of the Ministry of Health. North Sumatra Basic Health Research Data in 2018 the prevalence of hypertension in North Padang Lawas Regency was 696 cases or 2.97% of all districts and cities in North Sumatra Province.

Procedures for handling and using pesticides can pose a risk of health complaints to horticultural farmers. Excessive use of pesticides will increase control costs, increase the death of non-target organisms, and reduce environmental quality. The use of pesticides includes the time of spraying, the method of spraying, the dose of spraying, the amount of pesticides, and the use of insecticides in the house. Meanwhile, handling of pesticides includes storage, mixing, use of personal protective equipment, and personal hygiene.

Farmers are people who are at risk of the impact of pesticide pollution, this is due to frequent contact with spraying farmers, pesticide application equipment, pesticide storage, which can cause contamination of water, equipment at home and food. The impact of this pesticide pollution occurs due to a lack of knowledge by the family of farmers about the impact of this pesticide contamination, there are still many farmers who use pesticides who do not see and pay attention to how to handle it safely and well, thereby minimizing the impact of pesticide pollution.

The results of the initial survey conducted in Dolok District in 20 villages on May 15, 2021 showed that 100% of the farmers interviewed were 30 farmers using pesticides. The type of pesticide that is widely used by farmers is the Dursban 200 EC trademark with the active ingredient chlorpyrifos which belongs to the organophosphate group. Organophosphate pesticides are poisons, one of which is an increase in blood pressure (Nikmah, 2019). Based on the results of interviews with farmers in Dolok District, farmers use doses not according to the recommended use and mix 3-4 types of pesticides in one tank. Farmers who store pesticides in the house as many as 12 people with a percentage of 40% and in the fields as many as 18 people with a percentage of 60%. Farmers do not use complete personal protective equipment and only use long clothes, even 60% of farmers do not use personal protective equipment at all. 60% of farmers throw away their packaging in the trash (18 people), 20% of them are burned (6 people), and then 20% are collected and sold to collectors (6 people). Spraying time is more often done in the morning. From the interview results, 60% of the farmers experienced complaints of dizziness a few hours after spraying pesticides. In addition, based on the latest health checks by farmers, 40% of farmers have hypertension with an age range of 50 years. In addition, none of the respondents wore masks and only half of the respondents wore hats when cultivating. Every day the respondents only wear long pants, long-sleeved shirts, and shoes when spraying. The lack of personal hygiene or personal hygiene of farmers also increases exposure to pesticides. There are still many farmers who do not pay attention to personal hygiene, one of which is not washing their hands before eating or drinking and smoking/eating betel nut after spraying pesticides. In addition, some of the farmers interviewed experienced complaints of other health problems such as dizziness, fatigue and weakness.

The purpose of this study was to determine and analyze the effect of use of personal protective equipment and personal hygiene on hypertension incidence in farmers in Dolok District, North Padang Lawas Regency in 2022.

II. Research Method

This type of research was an analytical observational with a cross sectional design. Analytical observational research is trying to explore how and why health phenomena occur (Asyraini et al., 2022; Octiva, 2018). Then analyze the dynamics of the correlation between phenomena or between risk factors and effect factors (Pandia et al., 2018; Pandiangan et al., 2018; Pandiangan et al., 2022). The cross sectional design is a study to study the dynamics of the correlation between risk factors and effects, by using an approach, observational or data collection all at once (Octiva et al., 2018; Pandiangan, 2015).

Population is the total number of people or residents in an area (Octiva et al., 2021; Pandiangan, 2018). The population in this study are farmers who spray pesticides when farming in Dolok District, North Padang Lawas Regency, totaling 9,250 people. The sample is part of the number and characteristics possessed by the population, so the sample is part of the existing population (Pandiangan et al., 2021). So the sampling must use a certain method based on the existing considerations. This sampling used simple random sampling technique. Simple random sampling technique is a sampling technique when the population is close to homogeneous and the total population is known (Pandiangan, 2022). The sample in this study was 96.

This study used multivariate logistic regression analysis. This analysis was conducted to determine the strength of the relationship between the independent variable and the dependent variable (Tobing et al., 2018).

III. Results and Discussion

3.1 Overview of Research Sites

This research was conducted in Dolok District, North Padang Lawas Regency which consists of 5 villages namely, Pasar Sipiongot Village, Batu Runding Village, Parmeraan Village, Sipiongot Julu Village, and Pijor Koling Village. Based on the September Report, Dolok District, Dolok District is one of the sub-districts in North Padang Lawas Regency which consists of 86 villages and 0 sub-districts.

Dolok District is bordered on the north by Dolok Sigompulon District, on the south by Halongonan District, on the west by South Tapanuli Regency, and on the east by Labuhan Batu Regency. Dolok District has a population of 25,535 people with 13,063 males and 12,472 females. Its area is 402.85 km². Based on data from the Central Statistics Agency of North Padang Lawas Regency, the number of working population is 15,150 people with 9250 people working as farmers or about 85.54% of the total working population.

3.2 Multivariate Logistic Regression Analysis

Multivariate analysis in this study used multiple logistic regression test. After doing bivariate analysis on all independent variables, then the independent variables that will be included in the multivariate analysis are the variables that have been selected with the criteria of the independent variable having a p value < 0.25 and being an important variable in this study.

Table 1. Multivariate Logistic Regression Analysis Results

Model	B	Sig.	95% C.I. for EXP (B)		Exp (B)
			Lower	Upper	
Use of Personal Protective Equipment	-1.229	0.025	0.100	0.857	0.293
Personal Hygiene	-1.315	0.004	0.109	0.664	0.268
Constant	3.851				

The results showed that use of personal protective equipment and personal hygiene had an influence on hypertension incidence in farmers in Dolok District, North Padang Lawas Regency in 2022.

In the use of personal protective equipment, there were 22 people (22.9%) using complete personal protective equipment when spraying pesticides, and as many as 74 people (77.1%) not using complete personal protective equipment. Based on the results of the analysis, it was found that there was an influence between the use of personal protective equipment and the incidence of hypertension experienced by farmers with p value=0.025. From the results of the cross tabulation, it is known that of the 74 people (77.1%) who did not use complete personal protective equipment, there were 50 people (67.6%) who had hypertension, and 24 people (32.4%) did not have hypertension. Based on interviews, information was obtained that there are still many farmers who do not use complete personal protective equipment because farmers still do not use gloves when spraying pesticides, then farmers do not use boots when spraying pesticides, farmers do not use hats when spraying pesticides, and farmers do not use glasses when spraying

pesticides. Then farmers use t-shirts to cover their noses instead of using masks that should be used properly.

On personal hygiene, 39 people (40.6%) had good personal hygiene and 57 people (59.4%) had poor personal hygiene. Based on the results of the analysis, it was found that personal hygiene had an influence on the incidence of hypertension with p value=0.004. Where farmers who have poor personal hygiene on average farmers experience hypertension. Based on the results of interviews, information was obtained that there were still farmers who did not wash their hands after direct contact with pesticides, and on average, after spraying pesticides, they did not immediately change their clothes or take a shower. Personal hygiene is self-care that is carried out to maintain health both physically and psychologically. Personal hygiene is an activity or act of cleaning all parts of the body which aims to maintain one's cleanliness and health. Farmers' habits of cleaning spraying equipment at clean water sources also need to be given a proper understanding. Because it is feared that it can harm the environment, clean water sources can be contaminated with harmful chemicals. The impact of environmental pollution may not be felt immediately, but over time and the greater the amount of pesticide content in clean water and soil sources, it will increase the risk of health problems due to environmental pollution by pesticides.

IV. Conclusion

The results showed that use of personal protective equipment and personal hygiene had an influence on hypertension incidence in farmers in Dolok District, North Padang Lawas Regency in 2022.

Suggestions in this research are:

1. To farmers, especially farmers in Dolok District, North Padang Lawas Regency, it is expected to avoid excessive and continuous exposure to chemical pesticides so that farmers avoid health problems, namely hypertension. Then raise awareness and pay more attention to spraying time, spraying method, pesticide dosage, and pesticide storage according to the recommended packaging label. Use complete and appropriate personal protective equipment as appropriate, and maintain personal hygiene to avoid hypertension.
2. The Community Health Center is expected to be able to play an active role in providing counseling and knowledge to farmers about the dangers and impacts of using pesticides. Monitoring the health of farmers by conducting regular health checks.

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