

ANALYSIS OF HEALTH EFFECT FOR FARMERS AS INSECTICIDE USERS IN PURWORAJA VILLAGE

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Analysis of Health Effect For Farmers As Insecticide Users in Purworaja Village

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Abstract

Background: Pesticides are used in agriculture to increase the production of losses caused by various corpse bodies consisting of groups of pests and diseases and weeds. The type of pesticide that is widely used in Indonesia is insecticide. **Aim:** The purpose of the study was to analyze the use of insecticides, especially those related to public health in Purwaraja Village, Kikim Timur District, Lahat Regency. **Method:** This research was a quantitative research with cross sectional research design. This research was conducted in June 2017 with a sample of 85 respondents. Data processing and analysis was performed by presenting the frequency distribution of variables in the form of tables and analyzed using multiple logistic regression analysis. **Result:** The results showed that the characteristics of farmers were mostly ≤ 46 years old (58.8%), and low education (elementary and junior high school) of 87.1%, the variables studied were not related to insecticide use, the majority (71.8%) farmers' knowledge about the impact of insecticide use on public health was categorized as poor, the majority (64.7%) of insecticide use on farmers was categorized as poor. **Conclusion:** Training and educating should be conducted to farmers in using insecticide correctly.

Keywords : Farmers, Health, Insecticides

Background

Pesticides are used in agriculture to increase production from losses caused by various corpse bodies consisting of groups of pests and diseases and weeds. However, the use of pesticides has a negative impact on humans, biota and the environment. One of the negative impacts with the use of pesticides is the contamination of the aquatic environment (Chawla et al., 2018).

From 500,000 to 1,000,000 people per year throughout the world there are cases of pesticide poisoning that occur in workers in the agricultural sector and 5000 to 10,000 people per year experience fatal effects of cancer, disability, sterility and liver. Pesticide poisoning mostly occurs in developing countries (WHO, 2003).

The use of pesticides in Indonesia is still quite high and is increasing from year to year. At present almost all agricultural activities throughout the world use pesticides to control pests, one of which is Indonesia. The type of pest that is widely used in Indonesia is insecticide where its use reaches 70%³. The use of insecticides reached 55.42%, herbicide 12.25%, fungicide 12.05%, repellents 3.61%, wood preservatives 3.61%, growth regulators 3.21%, rodenticides 2.81%, grade ingredients or adhesive 2.41%, akarisisida 1.4%, moluscicide 0.4%, nematicide 0.44%, adjuvant 0.40%, and others amounting to 1.41%. The type of pesticide that is widely used is the type of insecticide (Chawla et al., 2018).

The negative impact of the use of insecticides can occur in acute or chronic ways resulting from contamination through three pathways, namely through the skin (epidermis), digestive tract (ingestion) and respiratory tract (inhalation). Acute exposure that can cause poisoning is irritation to the skin or eyes, and can cause death. While chronic exposure can occur cancer, nerve disorders, damage to internal organs and (Yarpuz-Bozdogan, 2018).

Insecticides that accumulate in the human body can cause symptoms of toxicity caused to humans namely headaches, tremors, stomach nausea, vomiting and fatigue. Chronic effects of pesticide poisoning are damage to the cells of the liver, kidneys, nervous system, immune system, and reproductive system (Diendéré et al., 2018).

Purwaraja Village, Kikim Timur Subdistrict, Bad District, almost all of its people work as farmers. The use of insecticides can be influenced by internal factors including; age, level of education, knowledge and health. A review of the health conditions of farmers in the agricultural environment will be a benchmark for how influential the effects of insecticide use will.

Subjects and Methods

This study was an observational study with cross sectional design. Subject of this study was farmers in Purwaraja Village in Sumatera Selatan. Data was collected with questionnaires. This research was conducted in June 2017 in Purwaraja Village, Kikim Timur District, Lahat Regency. Study samples were 85 farmer respondents interviewed to determine the effect of using insecticide insecticides (Kementrian Pertanian, 2012)

Results

This study found that the respondents were at most 46 years old, low education level (elementary and junior high school), long working hours, respondents also had the most poor knowledge, most respondents had poor health and the use of insecticide respondents was not good. Univariate analysis showed the following results:

Table 1. Results of Univariate Analysis

Variable	n	%
Age		
> 46 years	35	41.2
≤ 46 years	50	58.8
Education History		
High	11	12.9
Low	74	87.1
Working length		
Long	41	48.2
Short	44	51.8
Knowledge		
Good	24	28.2
Poor	61	71.8
Health Status		
Good	40	47.1
Poor	45	52.9
Insecticide Use		
Good	30	35.3
Poor	55	64.7

Table 2. Bivariate Analysis

Variable	Insecticide Use				p-value	Total	PR (CI 95%)
	Good		Poor				
	n	%	n	%			
Age							
> 46years	12	34.3	23	65.7	1.00	35	0.928 (0,37-2,29)
> 46years	18	36.0	32	64.0		50	
Education							
Low	26	35.1	48	64.8	1.00	74	1.05 (0.28-3.9)
Fast	4	36.4	7	63.6		11	
Working Length							
Long	15	36.6	26	63.4	0.98	41	1.115 (0.45-2.71)
Short	15	34.1	29	65.9		44	
Knowledge							
Good	9	37.5	15	62.5	0.98	24	1.143(0.42-3.04)
Poor	21	34.4	40	65.6		61	

Based on table 2 it is known that the number of respondents ≤ 46 years and respondents who had good knowledge are 36.0%, while respondents with age > 46 years and respondents who had good knowledge are 34.3%. So there was no relationship with p value = 1,000 (α - 0.05). Statistical results show that the age variable of the respondents has no relationship to influence the use of insecticides. Number of respondents who had a low level of education (SD, SMP) and good knowledge was 35.1%, while respondents with a higher education level and good perception were 36.4%. So that it did not have a significant

difference with p value = 1,000 ($\alpha = 0.05$). Statistical results found that education level variables do not have a relationship to influence the use of insecticides.

In this case it could prove that the level of education cannot be used as a basis for distinguishing the use of insecticides. The majority of respondents have a low education level of 74%, but this cannot be a limitation that can affect farmers' knowledge.

Based on the table above, it showed that the number of respondents in the respondents' knowledge and with the use of insecticides is 37.5%, while the respondents with poor knowledge and the use of good insecticides are 34.4%. So that there were significant differences with p value = 0.988 ($\alpha = 0.05$). The results in this study indicated that there was no significant relationship between knowledge and insecticide use.

Based on the table above shows that the number of respondents with good health and knowledge is 40%. While for respondents with poor health conditions and good knowledge is 60%. Statistical results show that health variables have no relationship to influence the use of insecticides.

Multivariate analysis in this study is used to determine which variables were most related to the dependent variable. The test used was multiple logistic regression (risk factor model) because the use of insecticides as the dependent variable and age, education level, knowledge, health as independent variables as categorical data. Multivariate analysis consisted of bivariate selection, full model, confounding test, final model. The table below is the result of the final or final model model from multivariate analysis.

Table 3. Multivariate Analysis

Variable	P-value	PR Crude	95 % CI	
			Min	Max
Working length	0,682	0,805	0,308	2,104
Knowledge	0,830	0,836	0,286	2,345
Health Status	0,653	0,666	0,270	1,639

The results of multivariate analysis showed that the variables that had a relationship with insecticide use in Purwaraja Village, Kikim Timur District, Lahat District were farmers' health conditions. The PR value obtained from the health condition variable was 0.6, which means that respondents with good health conditions who were able to increase insecticide use in Purwaraja Village, Kikim Timur Subdistrict, Lahat District were 6 times greater than respondents who had poor conditions after being controlled by confounders. variables during work and knowledge.

Discussion

This study found that there was a relation between health disorder and pesticide use for farmers. Pesticides can enter through the skin due to the spraying of farmers' skin so that pesticides can stick to the skin so that it enters the body. Pesticides can enter through the respiratory tract because when spraying farmers do not pay attention to the direction of the wind so that pesticides are inhaled with breathing. Pesticides can enter through the gastrointestinal tract due to spraying the farmers on the sidelines of eating and drinking activities and wiping sweat on their hands with their hands, sleeves or gloves that have been contaminated with pesticides, blowing the nozzle clogged with the mouth so that pesticides can enter directly. through the digestive tract. The maximum time needed to contact pesticides was 5 hours per day (Bhandari et al., 2018, Chawla et al., 2018, Danso-Abbeam and Baiyegunhi, 2018).

Bad behavior in the use of pesticides was related to individual factors of farmers, one of which was personal hygiene in the form of a person's effort or effort to maintain and enhance their own health status, namely: (a) Maintaining body hygiene, clothing and environment; (b) Healthy eating; (c) How to live regularly; (d) Increase endurance; (e) Avoiding the outbreak of disease. The act of maintaining cleanliness and health and is an effort to realize a high degree of health (Damalas and Koutroubas, 2018). In addition, the behavior of storing pesticides was also a determinant because farmers who carried out storage of non-standard pesticides could be poisoned (Al Zadjali et al., 2014).

Conclusion

In conclusion, the farmers health impact with insecticide use is categorized as poor at 68.9% with p-value of 0.530, which means there was no relationship between health conditions and insecticide use. The most common health problems for farmers were headache, which was 62.4%. Inform farmers that the use of endosulfan and deltamethrin insecticides was not recommended to pollute the environment and be more careful in consuming fish that have been contaminated with insecticides because it can cause health hazards to these farmers. Providing health services to monitor public health and provide training and counseling to farmers about the effects or dangers of using insecticides should be conducted.

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