

THE RELATIONSHIP OF KNOWLEDGE AND PERIOD OF WORK WITH COMPLIANCE IN THE USE OF FARMERS' PESTICIDE SPRAY PPE IN TRIYAGAN VILLAGE

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ABSTRACT

Relationship between Knowledge and Working Period with Compliance with the Use of Pesticide Spray PPE by Farmers in Triyagan Village. In 2019, there were 147 cases of agricultural pesticide poisoning in Indonesia. Preventing pesticide poisoning requires a high knowledge of personal protective equipment (PPE) and extensive work experience among farmers. This helps farmers become more skilled and aware of the risks, making them more careful and compliant with PPE usage. This study aims to determine the relationship between knowledge and years of service with compliance in using PPE when spraying pesticides. The research is analytical and observational with a cross-sectional design. Respondents were 57 farmers from Triyagan Village, all members of farmer groups. Total sampling was used to select participants. The research instruments included a questionnaire to assess farmers' knowledge and years of service and an observation sheet to evaluate PPE compliance. Data were analyzed using the gamma test and logistic regression. Bivariate analysis with the gamma test revealed a significant relationship between knowledge and years of service with PPE compliance among farmers in Triyagan Village ($p = 0.033$; $r = 0.525$; $p = 0.037$; $r = 0.402$). Multivariate analysis with logistic regression further confirmed the significant relationship, indicating that knowledge had a greater influence on PPE compliance than years of service ($p = 0.033$; OR = 3.319; $p = 0.037$; OR = 1.708). In conclusion, knowledge and tenure are significantly related to PPE compliance among farmers in Triyagan Village. Enhanced knowledge appears to be the critical factor in properly using PPE when spraying pesticides.

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INTRODUCTION

Based on data from the Food and Drug Supervisory Agency of the Republic of Indonesia (BPOM RI) in 2019, there were 147 cases of agricultural pesticide poisoning. According to the World Health Organization (WHO) in the Ministry of Agriculture, Directorate General of Food Crops (2020), around 25 million cases or 68,493 people are found to experience pesticide exposure every year. The high number of poisoning cases shows the need to increase farmers' understanding regarding personal protective equipment (PPE) and its use and consequences if they do not use PPE when using pesticides. Farmers' high level of knowledge regarding PPE and work experience can prevent work accidents or poisoning. ⁽¹⁾⁽²⁾

Unsafe actions and unsafe conditions are the main causes of work accidents in general. Factors for unsafe actions originate from the workers or farmers themselves, while factors for unsafe conditions originate from the surrounding environment. Unsafe actions originating from humans contribute to 85% of the total number of accidents. Spraying pesticides without using PPE is one of the unsafe actions carried out by farmers. ⁽³⁾⁽⁴⁾

Internal factors and external factors can influence a person's actions. Human actions are the result of human interactions and experiences with their environment. Internal factors originate from within humans, such as level of knowledge, emotional level, gender and so on. External factors are the physical, social, cultural, economic, political environment and so on. Farmers who have worked for a long time will be more familiar with the environmental conditions of the workplace. Farmers who have understand about PPE, its benefits, and the impacts caused by not using PPE when spraying pesticides, then you will comply with the use of PPE. ⁽⁵⁾ A person's behavior in carrying out actions is generally influenced by knowledge. Knowledge is the most important part in forming a person's actions. Behavior is the main factor related to compliance with the use of PPE among farmers. Formed Compliance with PPE use is supported by predisposing factors, enabling factors and reinforcing factors. Predisposing factors consist of length of service, age, level of education, attitudes and knowledge. Enabling factors consist of PPE supplies and work facilities. Reinforcing factors consist of regulations. Behavior that is formed based on knowledge will last longer than behavior that is not based on knowledge. One of the factors that influences farmer knowledge is knowledge. The farmer's experience gained during his profession as a farmer becomes the material for the farmer's knowledge in solving existing problems. Farmer education can be a source of farmer knowledge. Education indirectly makes it easier for farmers to understand PPE and the benefits they get when using it when spraying pesticides. ⁽⁶⁾⁽⁷⁾

Based on an initial survey conducted by researchers with farmers in Triyagan Village in February 2021 with the 10 farmers we interviewed, it was found that 9 farmers were in the old work period category and 1 farmer was in the new work period category. Based on the results of observations regarding compliance with the use of spray pesticide PPE, it was found that 2 farmers wore complete PPE and 8 farmers did not wear complete PPE.

Based on the results of interviews with the head of the Triyagan Village farmer group, it is known that farmers in Triyagan Village have been given counseling regarding the safe and secure use of pesticides. The material provided in the socialization included types of pesticides, the dangers of pesticides, how to use pesticides safely and the PPE needed for spraying pesticides. Based on the problems above, researchers are interested in conducting research about connection knowledge and work experience with compliance with the use of PPE for spray pesticides by farmers in Triyagan Village.

MATERIALS AND RESEARCH METHODS

This research is an analytical observational study with a cross-sectional approach carried out in Triyagan Village, Mojolaban District, Sukoharjo Regency from January 2021 to September 2021 with a population of 57 farmers. Research sampling was carried out using total sampling or saturated sampling techniques. This technique makes all members of the population into samples with a total sample of 57 farmers. The independent variable is knowledge and work experience while the dependent variable is compliance with PPE use. The independent variable is farmers' knowledge about PPE and its benefits as well as the impacts of not using PPE were measured using a questionnaire consisting of 22 questions with knowledge categories High (score 76-100), quite good (score 56-75), and poor (score <56). Work experience is measured by calculating where the very recent work period is <6 years, the new work period is 6-12 years, the old work period is 13-18 years, and the very old work period is > 18 years. Compliance with the use of PPE is measured in the compliant category if farmers wear PPE including masks, hats, gloves, long-sleeved shirts and trousers and the non-compliant category if they do not wear complete PPE. Next, analysis is carried out by calculating the distribution and percentage of each variable. Then proceed with the gamma test and a logistic regression test is carried out to determine the independent variables

(knowledge and years of work) that have the most influence on the dependent variable (compliance with wearing PPE). ⁽⁸⁾

RESULTS OF RESEARCH AND DISCUSSION

Table 1. Univariate Analysis Results

No	Respondent Characteristics/Research Variables	Frequency (Person)	Percentage (%)
1	Respondent Characteristics		
	a. Gender		
	Man	57	100
	Amount	57	100
	b. Age (Years)		
	25-29 Years	3	5.3
	30-39 Years	2	3.5
	40-49 Years	26	45.6
	50-59 Years	10	17.5
	60-70 Years	16	28.1
	Amount	57	100
	c. Level Education		
	Not completed in primary school	9	15.8
	elementary school	25	43.9
	JUNIOR HIGH SCHOOL	10	17.5
	SENIOR HIGH SCHOOL	13	22.8
	Amount	57	100
2	Research variable		
	a. Knowledge		
	Not enough	11	19.3
	Enough	5	8.8
	Tall	41	71.9
	Amount	57	100
	b. Years of service		
	Very New	17	29.8
	New	10	17.5
	Long	8	14.0
	Very long	22	38.6
	Amount	57	100
	c. Compliance with PPE Use		
	Not obey	38	66.7
	Obedient	19	33.3
	Amount	57	100

In this study, the research respondents were all male (57 farmers) because farmer work is a hereditary job which is generally carried out by men in Triyagan Village and the women help as much as they can, so farming is generally carried out by farmers. man. For this reason, it cannot be determined whether there are differences in the use of PPE according to gender. ⁽⁹⁾

The majority of respondents were aged 40 – 49 years as many as 26 respondents (45.6%). Based on survey results at this age, farmers have a main job other than farming and choose a side job as farmers. Reasons for choosin Farming has become a side job because respondents prefer work that is easily accessible and close to home, like farming. The older the farmer, the more mature and mature his soul tends to be. This was proven in his research: 30 respondents (62.5%) were more than 35 years old who adhered to wearing PPE ⁽¹⁰⁾.

The majority of respondents had elementary school education, namely 25 (43.9%). Education has nothing to do with compliance with the use of PPE because education does not have a direct influence on compliance with the use of PPE but only influences the mindset of the workforce ⁽¹¹⁾.

Based on calculating the respondents' knowledge, it is known that the majority have high knowledge with a frequency of 41 (71.9%). Most of the respondents' working periods fall into the very long working period category (more than 18 years) with a frequency of 22 (38.6%). Based on observations of respondents' compliance with PPE use, it was found that 19 respondents (33.3%) were compliant.

Analysis of the Relationship between Knowledge and Compliance with PPE Use The analysis in this research is to find out whether there is a relationship between knowledge with compliance with the use of PPE. Based on statistical tests using gamma with the SPSS version 25 program, the following data is known:

Table 2. Results of Analysis of the Relationship between Knowledge and Compliance with PPE Use. Compliance with PPE Use

	R	p
Knowledge	0.525	0.033
Years of service	0.402	0.037

Table 3. Results of Analysis of the Relationship between Knowledge and Years of Work with Compliance with PPE Use

Variable	Df	P value	Exp (B)
Knowledge	2	0.033	3,319
Years of service	2	0.037	1,708

Based on the table of statistical test results of the relationship between knowledge and compliance with the use of spray pesticide PPE, it shows that there is a significant relationship between knowledge and compliance with the use of PPE with a value of $p = 0.033$ or ≤ 0.05 . Meanwhile, the strength of the relationship is $r = 0.525$, so it is known that the level of relationship is moderate, and the direction of the relationship is + (positive), namely the higher the farmer's knowledge, the higher the compliance with farmers' use of PPE in Triyagan Village.

The results of this research are in line with research by Malis Sunarno et al., (2018) which states that there is a relationship between farmers' knowledge about and the practice of using PPE among potato farmers in the Kepakisan Village area, Batur District. The results of bivariate statistical analysis show significant results between knowledge and use. PPE. Bivariate analysis results show that the p value = 0.005 with an r value = 0.316. ⁽¹²⁾

The results of this research are also in line with research conducted by Mulyani et al., (2018) which states that there is a relationship between knowledge and compliance with the use of PPE and the value of $p = 0.045$. Study this was carried out in Paloh Gadeng Village, North Aceh Regency. In this research, it is stated that, the higher the farmer's knowledge, the better the farmer's behavior in using PPE. ⁽¹³⁾

The results of this study show that there is connection between knowledge with compliance with the use of PPE, this is because in the association held by BPP and farmers every 35 days BPP always provides counseling little by little regarding the use of PPE when spraying pesticides. The socialization material presented included PPE and its benefits, and the impacts caused by not using PPE. The counseling carried out by the BPP resulted in a joint agreement in the association forum and expressed verbally regarding the regulations for

spraying pesticides using PPE in the form of masks, hats, gloves, long-sleeved shirts and long trousers.

Based on the calculation results of respondents with high knowledge of 41 respondents (25 non-compliant respondents and 16 compliant respondents), it can be concluded that the knowledge of farmers who are not compliant is only at the first level and those who are compliant are already at the application level. According to Sertiya Putri (2018), farmers who do not comply at the first level of knowledge can be caused by farmers only remembering information about PPE but not yet reaching the level of understanding and applying the use of PPE. Farmers who have complied are included in the (application) level which can be interpreted as farmers having used the material studied in actual situations and conditions. ⁽¹⁴⁾⁽¹⁵⁾

Analysis of the Relationship between Work Period and Compliance with PPE Use Based on table 2, it is known that there is a significant relationship between length of service and compliance with the use of spray pesticide PPE with a value of $p = 0.037$ or ≤ 0.05 . Meanwhile, the strength of the relationship is $r = 0.402$, so it is known that the level of relationship is moderate, and the direction of the relationship is + (positive), namely the higher the length of service of farmers, the higher the compliance with the use of PPE by farmers in Triyagan Village.

The results of this research are in line with research by Kaligis et al., (2015) which states that there is a relationship between length of service and compliance with the use of PPE with a value of $p = 0.023$ or ≤ 0.05 . This research was conducted on farmers in Rurukan Village, East Tomohon District. In research It states that farmers who have been spraying pesticides for a long time have more experience and are more able to master work situations, including how to work safely. ⁽¹⁶⁾

However, the results of this study are not in line with research by Hayati et al., (2018) which states that there is no relationship between length of service and compliance with wearing PPE ($p = 0.678$). The research was conducted in Candi Laras Village, Candi Laras Selatan District, Tapin Regency with a total of 378 farmers as respondents. In this study, it was stated that the reason respondents did not comply with the complete use of PPE was because they felt that so far they had been fine and there was no significant danger due to not using PPE. ⁽¹⁷⁾

The results of this study show that there is a relationship between length of service and compliance with the use of PPE. This research is in line with the theory according to Notoatmojo (2010) in Fradilla (2020) which states that work period is one of the factors that influence behavior, the longer the worker's work period, the more familiar the worker is with the workplace and is accustomed to the work environment. ⁽¹⁸⁾

Analysis of the Relationship between Knowledge and Years of Work with Compliance with PPE Use In this study, the multivariate analysis used was the logistic regression test. Multivariate analysis is a continuation of bivariate analysis, with the condition that the independent variables show a p value of < 0.25 , with the aim of finding out how much influence the independent variables have on the dependent variable. The results of the bivariate analysis show that the two independent variables, namely knowledge with a value of $p = 0.033$ and work experience with a value of $p = 0.037$, can be continued with multivariate analysis. The results of calculations using the logistic regression test show that knowledge and length of service both have an influence on compliance with the use of PPE ($p = 0.033$; $p = 0.037$). Based on the calculation of the strength of influence which can be seen from the OR value, the independent variable knowledge shows an OR value = 3.319 and the independent variable length of service shows an OR value = 1.708. Based on the results of these calculations, it can be seen that the independent variable knowledge has a stronger influence than the independent variable length of service. This shows that the independent variable knowledge can have a 3.3-fold influence on compliance with PPE use, while the independent variable of work experience only has a 1.7-fold influence on compliance with PPE use.

The results of this research are in line with Dewi's (2020) research on the influence of knowledge with compliance with PPE use ($p = 0.030$). From the results of this research analysis, it was obtained that the value of OR = 6.851, which means that farmers with good knowledge have the opportunity/opportunity to use PPE 6.851 times greater than farmers with less good knowledge. In this study, there was no relationship between length of service and use of PPE ($p = 0.276$). This research was conducted at the Lebong Siarang Vegetable Garden in Palembang with 34 farmers.⁽¹⁹⁾

This research is also in line with the opinion of Kholid (2014) in Ambarwati & Prihastuti, (2019) that knowledge is the most important domain for forming a person's actions. Farmers who have good knowledge will comply with the use of PPE Good. According to Notoatmodjo (2003) in Malis Sunarno et al. (2018), which states that behavior that is based on knowledge will be more lasting than behavior that is not based on knowledge⁽⁶⁾.

This research is in line with the opinion of Suma'mur in Sa'adah, (2017) who stated that the experience of being alert to accidents increases according to the growth of work period and length of work at the workplace in question. The longer farmers work, the more experience they gain and the higher they become knowledge Andhis skills.⁽²⁰⁾

CONCLUSIONS AND RECOMMENDATIONS

The knowledge level of farmers in Triyagan Village is predominantly high, with most of them engaged in very lengthy work periods. However, compliance with the use of Personal Protective Equipment (PPE) among these farmers tends to be low.

A significant correlation exists between knowledge and compliance with PPE usage among farmers in Triyagan Village ($p = 0.033$; $r = 0.525$). Similarly, there is a significant association between years of service and compliance with PPE usage ($p = 0.037$; $r = 0.402$).

Furthermore, the relationship between knowledge, years of work, and compliance with PPE usage for pesticide spraying among farmers in Triyagan Village is noteworthy. Knowledge appears to exert a stronger influence on compliance with PPE usage than the duration of work.

Suggestions for improvement include emphasizing the necessity of complete PPE during pesticide-related activities, enhancing outreach efforts by the Agricultural Extension Agency (BPP) regarding pesticide hazards and safe handling, and leveraging farmer groups as communication channels between BPP and farmers. Additionally, future research should explore additional variables influencing PPE compliance and utilize mixed method approaches to gather more comprehensive and objective data. This can facilitate participation from illiterate respondents through interviews or alternative methods.

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