p-ISSN 2086-6380
e-ISSN 2548-7949

Jurnal Ilmu Kesehatan Masyarakat, July 2019, 10(2):101-111
DOI: https://doi.org/10.26553/jikm.2019.10.2.101-111
Available online at http://www.jikm.unsri.ac.id/index.php/jikm

DETERMINANTS BEHAVIOR OF HOUSEHOLD INSECTICIDEUSEIN SUBDISTRICT INDRALAYA OGAN ILIR, INDONESIA

Imelda G. Purba,[1] Rico Januar Sitorus[2]
[1]Environmental Health Departement Faculty of Public Health, Sriwijaya University
[2]Epidemiology DepartementFaculty of Public Health, Sriwijaya University

ABSTRACT

Nowadaysthe use of insecticid esare used in households to control many kind of insects that arevectors of desease. High-intensity insecticide exposure can cause poisoning and other adverse health effects. Insecticide handling behavior is one of the determinant factors of exposure intensity.The objective of this study was to analyze determinants of household insecticide handling practices in the Indralaya Ogan IlirDistrict. An observationalanalytical study with a cross-sectional approach was carried out usingcluster sampling. The study involved 150 housewives who have used insecticides in their households.Data was collected through interviews using questionnaires and observations using a checklist.Processing data was performed using software. Data were analyzed using a Chi-Square testwith a 0.05 significance level. Research results showed there was a significant association between ageand handling behavior of household insecticides (p=0.006).Also, education level significantly correlated to household insecticide handling practices (p=0.05); marital status correlatedto household insecticide handling practices significantly (p=0.028). Significant association was also found between attitudes regarding handling behavior of household insecticides (p=0.035). On the other hand, employment status (p=0.165), socioeconomic status (p=1.000), knowledge (p=0.796), counseling(p=0.472) and insecticide waste disposal facilities (p=0.331) were not associated with handling behavior of household insecticides. It is concluded that there weresignificant associationsbetween age, education level, marital status, and attitudesregarding handling behavior of household insecticides(Chi-Square test, all p≤0.05).However,employment status, socioeconomic status, knowledge,counseling, andinsecticide waste disposal facilitieswere not associated with handling behavior of household insecticides (Chi-Square test, all p>0.05).

Keywords: Household insecticide,knowledge, attitude, handling behavior

PERILAKU PENANGANAN INSEKTISIDA RUMAH TANGGA DI KECAMATAN INDRALAYA

ABSTRAK

Saat ini penggunaan insektisida rumah tangga di masyarakat selalu mengalami peningkatan seiring meningkatnya vektor serangga sebagai penular berbagai penyakit. Intensitas pajanan pestisida yang tinggi dapat meneyebabkan keracunan dan dampak buruk lainnya bagi kesehetan. Perilaku penanganan insektisida merupakan salah satu faktor penentu intensitas pajanan. Tujuan penelitian ini menganalisis determinan perilaku penanganan insektisida rumah tangga di Kecamatan Indralaya Ogan Ilir. Penelitian ini adalah analitik observasional dengan pendekatan *Cross Sectional* menggunakan teknik *random sampling.* Penelitian ini melibatkan 150 ibu rumah tangga yang menggunakan insektisida di ruamh tangganya. Data dikumpulkan melalui wawancara menggunakan kuesioner dan observasi menggunakan *checklist*. Pengolahan data menggunakan *software*. Data dianalisis menggunakan uji statistik *Chi-square* pada tingkat kemaknaan 0,05. Hasil penelitian menunjukkan ada hubungan bermakna antara umur dengan perilaku penanganan insektida (p=0,006), juga tingkat pendidikan berhubungan dengan perilaku penanganan insektisida (p=0,05); status perkawinan berhubungan dengan perilaku penanganan insektisida (p=0,028), hubungan signifikan juga ditemukan antara sikap dengan perilaku penanganan insektisida rumah tangga (p=0,035). Di sisi lain status pekerjaan tidak berhubungan dengan perilaku penanganan insektisida (p=0,165), status sosial ekonomi, (p=1,000), pengetahuan (0,796), penyuluhan (0,472), dan fasilitas pembuangan sampah insektisida (p=0,331)

[1] *Correspondece Address: Imelda G. Purba, Jl. Palembang Prabumulih KM 32, Indralaya Kabupaten Ogan Ilir, Sumatera Selatan*
Email: imeldapurba7@gmail.com

tidak berhubungan bermakna dengan perilaku penanganan insektisida rumah tangga. Disimpulkan bahwa ada hubungan yang bermakna antara umur, tingkat pendidikan, status perkawinan, dan sikap dengan perilaku penanganan insektisida ruamh tangga (*chi-sguare test , semua p< 0,05)*. Sementara status pekerjaan, status sosial ekonomi, pengetahuan, penyuluhan dan fasilitas pembuangan sampah insektisida tidak berhubungan bermakna dengan perilaku penanganan insektisida rumah tangga.

Kata kunci : Insektisida rumah tangga, pengetahuan, sikap, perilaku penanganan

INTRODUCTION

Household insecticides are used in households to kill various types of insects, especially insects that are vectors of disease. The most common insecticides used in households are anti-mosquitoes; this is possible because of the increasing population of mosquitoes that are often vectors of infectious diseases. Infectious diseases through mosquito vectors such as malaria and dengue hemorrhagic fever are still a health problem in Indonesia, because of the large number of malaria endemic areas or dengue hemorrhagic fever, so it is necessary to make control efforts. Efforts to control mosquito vectors with the use of insecticides be the most preference in the community. This is evident from the higher proportion of insecticide use compared to other control measures such as mosquito nets. Types of insecticides used in households such as anti-mosquitoes fuel for 48.4%, repelen (16.9%), insecticides (12.2%).Use of anti-mosquitoes fuel was higher in rural areas (50.0%) than in urban areas (46.9%). On the other hand, the use of repellent (23.2%) and insecticides (17.9%) tended to be higher in urban proportions than in rural areas of 10.4% repellent and 6.4% insecticides.[1]

Based on data of mosquito vector control in households in DKI Jakarta, the proportion of household insecticide use is 80%. Based on the type used, each showed 36.6% spray insecticide, 14.8% fuel insecticide, 15.6% topical insecticides, and 12%electric insecticides, and 12.3% was a combination of burning insecticides and spraying.[2] Research conducted by Kusumastuti in Pangandaran Village revealed 82% of households use anti-mosquitoes everyday, and 59% have been using them for more than ten years. While the number of different types of anti-mosquitoes used varies, some use one type (62%) and there are more than one type, even up to four types with usage at once.[3] As an effective chemical for insect control, household insecticides are generally toxic, with different levels of toxicity. Pesticide exposure at concentrations exceeding the threshold value can cause acute toxicity, whereas exposure to lower concentrations over a long period of time can cause health disruption because insecticides can persist and accumulate in the human body. Some of the adverse effects of human exposure to pesticides include asthma, calcification of bones, allergies, carcinogens, hypertension, and reproductive disruption.[4]

Indralaya is a sub-district located in Ogan Ilir Regency in South Sumatera Province. Communities in Indralaya in controlling vectors in households one way by using insecticide anti mosquitoes.Results of research in 2016 on household insecticide use in Indralaya showed that the most frequent use of fuel anti-mosquito reached 81.3%, daily use of anti-mosquitoes reached 72%, using more than once a day 34%, using more than one type anti-mosquitoes 32%, the majority use at night by 78%.[5]

The behavior of household insecticide handling will determine the intensity of exposure, meaning that when a person behaves well in handling insecticides they will minimize the pesticides that enter their body, so the behavior of insecticide handling is very important in order to prevent the occurrence of poisoning due to acute or chronic exposure

to insecticides. According to Lawrence Green (1980), human behavior is influenced by three factors: predisposing factors (knowledge, attitudes, socio-demographic factors); enabling factors (facilities, or infrastructure); and reinforcement factors (community figures, regulations, decrees from central or local government officials).[6] Seeing the magnitude of adverse impacts that can arise in a community in relation to exposure to insecticides, so the aim of this study was to analyze determinants of household insecticide handling behavior in the Indralaya Ogan Ilir sub-district.

METHODS

This research was an observationalstudyusing across-sectional approach. The research population were all housewives who lived in 20 villages and sub-districts in Indralaya Ogan Ilir. Samples were taken as many as 150 housewives with cluster sampling, through the stages:

1. Selecting as many as 35% of the number of villages (seven villages) were randomly simple.
2. Selected villages were Indralaya Indah, Indralaya Mulia, Lubuk Sakti, Pairing, Sakatiga, Tanjung Seteko and Tanjung Gelam.
3. Choosing housewives as many as 150 person from the seven selected villages.

There were two kinds of instruments in this research:questionnaires and checklist.The questionnaires had previously been tested for validity and reliability using the Pearson Product Moment Test with a 0.05 significance level.Collection ofindependent variabledatasuch as age, employment status, education level, socioeconomic status, marital status,knowledge, attitude, counseling, waste insecticide disposal facilitiesand dependent variable data (handling behavior)werethrough interviews using questionnaires. The behavior of insecticidehandling in households was observed using checklists.

The collected data was then processed by stage editing, coding, data entry, and data cleaning. For analysis purposes, some scale-ratio data were converted to nominal scale (i.e. data transformation) such as dataon age,knowledge, attitudesand behavior.Data was processed using software. There were two stagesof data analysis:univariate and bivariate analysis. Univariate analysis was performed to study the distribution of data frequency of nominal or ordinal scale. Bivariate analysis was conducted to analyze the relationship between two variables. The bivariate test used in this study (hypothesis test) was a Chi-Square test using a 0.05 significance level and risk estimation using a Prevalence Ratio (PR)at Confidence Interval (95% CI).

RESULTS

Univariate Analysis

Socio-Demographic Characteristics

Household insecticides used in the Indralaya District as a whole was anti mosquitoes, so in this research the household insecticide was anti mosquitoes. The kind of anti mosquitoes consists of liquid anti mosquitoes, repellent, fuel anti mosquitoes, and electrical in a variety of trade names. The active ingredients contained in the anti mosquitoes vary. They which belong to the group of Pyrethroid, Carbamate and Organophosphate, including Sipermetrin, Transfluthrin, D-aletrin, Praletrin, Metoflutrin, and Propoxur.The results describes the proportion of respondents in both age groups of approximately the same, of which 49.3% were in the <40 years and 50.7% in the ≥40 years group.The proportion of housewives that were employed was smaller (36.7%) than unemployed (63.3%). The majorityof respondents was lowest educated (63.3%), while the highest educated was only 4%.The socioeconomic levelmajority was low (60%) compared to the high socioeconomic (40%) and generally respondents were married (90%). The complete data as shown in Table 1.

Table 1.
Distribution of the Respondents Characteristics in Subdistrict Indralaya

Variables	Total of Respondents	
	n	%
Age		
< 40 years old	74	49,3
≥ 40 years old	76	50,7
Employment status		
Employ	55	36,7
Unemploy	95	63,3
Education level		
Low	92	63,3
Moderate	49	32,7
High	6	4,0
Socio economic level		
Low	90	60,0
High	60	40,0
Merital Status		
Married	135	90,0
Unmarried	15	10,0

Knowledge, Attitude, Behavior, Insecticide Handling Counseling, and Waste Disposal Facilities of Respondents

The results showed that knowledge about insecticides was mostly less (56.7%). Knowledge of insecticide use method of majority less good (85.3%), while knowledge of storage method of insecticide majority have good (65.3%). In general the knowledge of insecticide handling wasless (89.3%). Insecticide use attitude was good (86.7%), attitude in storage of insecticide majority was good (91.3%), attitude in insecticide waste management mostly good (63.3%). Respondent's handling behavior of household insecticide was still less,reaching 62.7%.Counseling on how to handle household insecticides was very rarely done in the community.Based on interviews, most ofthe housewives never received counseling (94.7%). Most housewives(92.7%) stated that there were no special waste disposal facilities for insecticides. For more details can be seen in Table 2.

Bivariate Analysis
Distribution of InsecticideHandling Behavior Based on Characteristics of Respondents

Data describe that respondents who were<40 years old tended to behave poorly in insecticide using (74.3%) when compared with those ≥40 years old which was only 51.3%. The results of statistical tests showed a significant relationship between age and behavior (p=0.006). Respondents aged <40 years were at risk of 1.45 times for bad behavior compared to ≥40 years old in household insecticide using. The education level of housewives was still low, whereas respondents with low and middle education tend to behave badly, 66.3% and 61.2% respectively.The Chi-Square test showed a significant relationship between education level and insecticide handling behavior (p=0.05). Poor behavior of household insecticide using tends to respondentunemploye(67.4%) compared to employ (54.5%).Chi-Square analysis showed that there was no significant relationship

Table 2.
Distribution of Knowledge, Attitude, Behaviour, Insecticide Handling Counseling and Waste Disposal Facilities of Respondents.

Variables	Total Of respondents	
	n	%
Knowledge about Insecticide	85	56,7
Less	65	43,3
Good		
Knowledge about Use of insecticide		
Less	128	85,3
Good	22	14,7
Knowledge about Insecticide storage		
Less	52	34,7
Good	98	65,3
Knowledge about Insecticide handling		
Less	134	89,3
Good	16	10,7
Attitude in Use insecticide		
Less	20	13,3
Good	130	86,7
Attitude in Insecticide storage		
Les	13	8,7
Good	137	91,3
Attitude in Insecticide waste management		
Less	55	36,7
Good	95	63,3
Handling Behaviour		
Less	94	62.7
Good	56	37.3
Insecticide handling counseling		
No	142	94,7
Yes	8	5,3
Waste disposal facilities		
Not available	139	92,7
Available	11	7,3

between employment status and household insecticide handling behavior (p=0.165).Poor behavior of household insecticide treatment almost equal proportion in housewifes with low socioeconomic (62.2%) and housewifeswith high socioeconomic (63.3%).Chi-Square analysis showed no significant relationship between socioeconomic status and household insecticide handling behavior (p=1.000). Married housewifes tended to behave badly (65.9%) compared to unmarried/widowed participants (33.3%) in handling of household insecticides. Based on the Chi-Square test, it can be concluded that there was a significant relationship between marital status and household insecticide handling behavior (p=0.028). Married housewives were 1.98 times higher risk for bad behavior in household insecticide treatment than unmarried housewifes(widows) at 95% CI 0.96-4.09.More data are presented in Table 3.

Table 3.
Distribution of Insecticide Handling Behavior Based on Charasteristics of Respondents

Characteristics	Behavior		P value	PR (95 % CI)
	Bad	Good		
Age				
<40 years	55	19	0,006	1,45 (1,12-1,87)
≥40 years	39	37		
Education Level				
Low	63	32		
Moderate	30	19	0,05	
High	1	5		
Employment status				
Employ	30	25	0,165	0,81(0,63-1,07)
Unemploy	64	31		
Sosio economic level				
Low	56	34	1,000	0,98 (0,76-1,26)
High	38	22		
Merital status				
Married	89	46	0,028	1,98 (0,96-4,09)
Unmarried	5	10		

Distributionof Insecticide Handling Behavior Based on Knowledge, Attitude, Counseling, and Waste disposal Facilities

The proportion of poorly behaved in household insecticidehandling was higher on respondentswho have high knowledge (68.8%). The Chi-Square test showedthere was no significant relationship between the level of knowledge with and handling behavior of household insecticides (p=0.796).The respondents with bad attitudes tended to behave badly (74.5%) than respondents with good attitude (55.8%) in handling of household insecticides.The Chi-Square test concluded there was a significant relationship between attitude and handling behavior of insecticide (p=0.035). A bad attitude at risk 1.34 times higher than a good attitude to behave badly in handling household insecticides 95% CI 1.06-1.69.The majority of respondents never received counseling about household insecticides. Respondents who had nothad counseling tended to misbehave (90%) than who had been in counseling (50%). However, the Chi-Square test did not show any significant relationship between counseling on insecticide handling (p=0.472). Only a small percentage of the respondents of their waste disposal facilities were available. Respondents whose garbage disposal facilities were not available tended to behave poorly (64%) than well behaved (45.5%). Nevertheless, the Chi-Square test showed no significant relationship between the availability of waste disposal

facilities with the handling behavior of household insecticides(p=0.331).For more details can be seen in Table 4.

Table 4.
Distributionof Insecticide Handling Behavior Based on Knowledge, Attitude,Counseling and Waste Disposal Facilities

Variables	Behavior		P Value	PR (95 % CI)
	Bad	Good		
Knowledge				
Low	83	51		
High	11	5	0,796	0,90(0,63-1,29)
Attitude				
Bad	41	14	0,035	1,34(1,06-1,69)
Good	53	42		
Counseling				
No	90	52	0,472	1,28(0,62-2,56)
Yes	4	4		
Waste Disposal Facilities				
Not Available	89	50	0,331	1,41(0,73-2,72)
Available	5	6		

DISCUSSION

Behavior is an individual's response or reaction to stimulus from outside or from within, where individual behavior is formed based on all kinds of experience and human interactions with the environment.[7] Insecticide handling behaviors of the respondents are determined by the level of knowledge of the insecticide, which includes insecticide hazards, safe use practices, the use of personal protective equipment, safe storage, and waste handling. The level of education determines the level of knowledge of respondents on how to handle good insecticides when using household insecticides, how to store insecticides safely in household so as not to pollute clean water, drinking water, and foods. The results showed that the behavior of insecticide handling of households was mostly bad (62.7%). When respondents spray antimosquitoes usually do not use gloves or masks, spray when there are family members in the room, storing the antimosquito in any place, and waste liquid insecticide packaging is burned or disposed of in any place.

Insecticides enter the body in several ways: through the respiratory tract, the digestive tract through the mouth, and through the skin. Contamination through the skin is most common, with more than 90% of cases of poisoning worldwide due to contamination through the skin. Poisoning due to pesticide particles inhaled through the nose is the second largest after contamination through the skin.[8] The use of spray anti mosquitoes and burning anti mosquitoes is a high exposure risk through respiration, skin exposure during contact with liquid and burning anti mosquitoes without gloves.

The results of a previous study described the type of anti mosquitoes used in Indralaya sub-district were burn anti mosquito (81.3%), liquid (26.7%), Repelent (18.7%), electric (4.7%). The most frequently used anti mosquito were burn anti mosquito (81.3%), and liquid (10.1%), while respondents using two types of anti mosquito simultaneously as much as 28.7%, and some even use 3 types simultaneously (3.3%).[5] This condition can increase the risk of poisoning. Toxicologically, if two organophosphate or carbamate insecticides are administered simultaneously, the resistance to cholinesterase is usually additive, meaning a situation in which the combined effect of two pesticides is equal to the sum of the effects of each pesticide when given individually, so that the toxicity is greater.[9]

The education level of respondents was relatively low (63.3%); the majority only graduated from elementary schoolorjunior high school, and many still did not complete elementry school. Younger respondents had higher levels of education than older respondents, explaining the relationship between age and education level. The level of education can be one determinant of the level of knowledge of a person, and there was a tendency of housewives who had a higher level of education to have a good level of knowledge on the behavior of household insecticide using. This study showed the level of knowledge is significantly related to insecticide handling behavior. This supports the finding of a significant association between age and insecticide handling behavior. Younger respondents were more likely to get insecticide information more intense than older respondents because the education level of younger respondents tended to be higher than older ones.

Respondents who wereemployed tendedto behave well in insecticide use than those who were unemployed. Usually access to information on people who employ relatively easier to obtain because many interact with people in the workplace, available facilities that support access to information both electronic and print media. This will increase his knowledge including knowledge of insecticides. Through a good understanding of insecticides, respondents do good handling of insecticides. Nevertheless, the results of the study do not prove the association of job status with insecticide handling behavior. Wigati also showed that job status was not significantly related to anti mosquitos repellent behavior (p=0.900).[10]

Socioeconomic statuswas not a benchmarkof good insecticide handling behavior, based on the results of this study.The proportion of respondents with high socioeconomic status was the same with the low socioeconomic status both tend to be bad, so there was no significant correlation between socioeconomic status with behavior use of insecticide. Results from a study by Wigati also found no significant relationship between economic status and behavior use of anti mosquitoes(p=0.916).[10] The socioeconomic status of an individual was not necessarily a good behavior in household insecticide handling.

The results showed that marital status was one of the factors that determined the behavior of household insecticide use. Married respondents tended to behave poorly (34.1%) than those who were unmarried (66.7%) in use of household insecticides. Respondents who were not married in this research were widows. Education level of respondents who were not married in general high school,so can be categorized high. The level of education will certainly determine the level of one's knowledge. The results of this research proved a significant relationship between the level of education with the behavior of household insecticide handling. In this study, unmarried respondents also tended to have good knowledge about household insecticide handling. This is probablyfor a significant relationship between marital status and household insecticide handling behavior.

The level of knowledge of housewives regarding insecticides and their handling the majority is still low.This is probably due to the low education level of women of childbearing age. Low level of knowledge of housewives is also possible because of socialization or fostering of women of childbearing age on the wayhandling of insectides is very less done in the Indralaya District. The results of interviews with the respondents only 5.3% among those who had received counseling about the dangers of pesticides and that too only once.

Knowledge is the result of knowing, which occurs after a person senses a particular object, where sensing takes place through the human senses, namely sight, hearing, smell, taste and touch, and much of human knowledge is obtained through the eyes and ears.[6] Rogers mentioned that knowledge underlies the formation of a person's behavior, where knowledge-based behavior is usually more lasting than behavior that is not based on knowledge.[11] A correct understanding of the knowledge of the spread of disease will affect the way it treats for the traditional community, the experience of the community is a source of knowledge.[12] Several research results indicate a significant relationship between the level of knowledge with the behavior of handling pesticides.[13,14,15] While Pratamawatimentioned there is no significant relationship between knowledge of DHF vector and the behavior of household insecticide use in controlling DHF vector (p=0.479).[12]

Attitude is a reaction or response from someone is still closed. Rogers mentioned the adoption of new behaviors can be lasting if based on awareness, knowledge, and a positive attitude. Attitude is a predisposition of an action, meaning that a positive attitude will predispose to the formation of an action or behavior. But not always positive attitude will lead to the formation of action, there are times when someone has a positive attitude but does not take action. So it can be said that attitude is not yet an act, but only as readiness or willingness to act as mentioned by Newcomb.[11]

Based on the result of Wahyuni in his research on the behavior of onion farmers in the use and handling of pesticides in Brebes,one of the factors that influence the behavior of pesticide handlers is the attitude of farmers, where the attitude and perception of farmers against pesticides are still wrong.[16] The result of Ayuningtyas also mentioned that there was a significant correlation between attitude and behavior of pesticide use among chilli farmers in the Wuluhan Jember sub-district (p=0.033).[15] In the results of his research,Wigati suggests that attitudes related significantly to the behavior of the use of anti mosquitoes.[10]

Based on the observation result at home respondent majority did not behave well in handling of insecticide when using household insecticide, such as when spraying anti mosquitoes liquid not using protective equipment such as mask or cover nose, gloves. The way insecticides were stored in the house is that most of the respondents were still poor, insecticides were placed in any place so it iwas possible for high enough exposure to each family member and the possibility of insecticide contamination in the environment around the house such as clean water source, kitchen equipment, and even food. While respondents who have a good attitude tend to behave well in the handling of insecticides, have been paying attention to how to reduce the contact or exposure both to himself and other family members, with attention to how to store a good insecticide in the home environment.

Special sheltersfor insecticide packaging waste are not yet available. Only 7.3% of respondents had a special shelter for insecticide packaging from a total of 150 respondents. This causes the high proportion of bad behavior of use of household insecticides. Poor behavior of insecticide in respondents who did not have home

household insecticide shelter to reach 64%, whereas respondents were available shelter of household insecticide waste 54.5%. Household insecticide waste is included in the category of hazardous and/or toxic waste materials, which must be well managed so as not to pollute water, soil and air. The remains of insecticide in packaging can potentially contaminate water, soil orfood.

The proportion of housewives who had not received counseling behaved poorly in insecticide treatment was higher than housewives who had been counseled about how to handle household insecticides. This may explain the tendency of bad behavior in the handling of pesticides in women of childbearing age who never get counseling. Counseling needs to be done to improve housewives' knowledge about insecticides. Good knowledge of insecticides can lead to a positive attitude for housewives to be able to behave properly in handling insecticides.Counseling on insecticide handling is important for housewives to improve their understanding of insecticides.

CONCLUSION

Insecticide handling behaviorin the Indralaya sub-district majorityis still poor. Use of Insecticide behavior is determined by several factors including age, education level, marital status, and attitude. While factors such as employment status, socioeconomic, knowledge, availability of insecticide waste disposal facilities, and counseling about insecticidesare not factors that determine the behavior of household insecticide handling. Guidance on handling of household insecticides can be a solution to increase public knowledge about pesticides, so that there is a positive attitude toward the importance of good handling of household insecticides. The availability of special waste disposal facilities for insecticide packaging became an obstacle for the community to conduct sanitary waste disposal.

REFERENCES

1. Kementerian Kesehatan Republik Indonesia. Hasil Riset Kesehatan Dasar, 2013.
2. Raini M. Toksikologi Insektisida Rumah Tangga danPencegahan Keracunan. Media Penelitian dan Pengembangan Kesehatan, 2009; 19(Suplemen II): 27-33.
3. Kusumastuti NH. Penggunaan Insektisida Rumah Tangga Antinyamuk di Desa Pangandaran, Kabupaten Pangandaran. Widyariset, 2014;17 (3): 417-424.
4. Titiek Siti Yuliani HT, Kooswardhono Mudikdjo, Nurmala K. Panjaitan, Sjafrida Manuwoto Pestisida Rumah Tangga untuk Pengendalian Hama Permukiman Pada Rumah Tangga JPSL, 2011;1(2): 73-83
5. Purba IG. Penggunaan Insektisida Antinyamuk pada Ibu Rumah Tangga di Kecamatan Indralaya. Seminar Nasional "Manajemen Bencana Kesehatan di Indonesia : Peran Perguruan Tinggi dalam Tangap Darurat Bencana".Palembang: Fakultas Kesehatan Masyarakat Universitas sriwijaya; 2006
6. Notoatmodjo S. Pendidikan dan Perilaku Kesehatan Jakarta: PT.Rineka Cipta; 2003.
7. Sarwono S. Sosiologi Kesehatan : Beberapa Konsep Beserta Aplikasinya Yogyakarta: Gadjah Mada University Press; 2007.
8. Djojosumarto P. Teknik Aplikasi Pestisida Pertanian. Yogyakarta: Penerbit Kanisius; 2008. 211.

9. Kusnoputranto H. Pengantar toksikologi lingkungan. Kakarta: Direktorat Jenderal Pendidikan Tinggi Departemen Pendidikan dan Kebudayaan; 1995.
10. Wigatini, R.A., Lulus Susanti. Hubungan Karakteristik, Pengetahuan, dan Sikap, dengan Perilaku Masyarakat dalam Penggunaan Anti Nyamuk di Kelurahan Kutowinangun. Buletin Penelitian Kesehatan, 2012;40(3):130-140.
11. Wardhani RAS. Studi tentang Kesadaran 2008 (cited 2017 Oktober 10). Available from: lib.ui.ac.id/file=digital/122795-S-5345.
12. Diana Andriyani Pratamawati ASI, Widiarti. Hubungan antara Perilaku Penggunaan Insektisida Rumah Tangga dengan Riwayat Pernah SakitDemam Berdarah Dengue di Provinsi Bali Tahun 2011. SPIRAKEL, 2015;7 (2):15-27.
13. Wiji Prayitno ZS, Tengku Nurhidayah. Hubungan Pengetahuan, Persepsi dan Perilaku Petani dalam Penggunaan Pestisida pada Lingkungan di Kelurahan Maharatu Kota Pekanbaru. Jurnal Kajian Lingkungan, 2014;2:220-236.
14. Budi Rario K, dan Su Ritohardoyo. Persepsi Dan Perilaku Petani Dalam Penanganan Risiko Pestisida Pada Lingkungan Di Kelurahan Kalampangan, Kecamatan Sabangau. Manusia dan Lingkungan, 2005;12(1):43-52.
15. Ayuningtyas D. Faktor yang Berhubungan dengan Perilaku Penggunaan Pestisida sebagai Upaya Pencegahan Pencemaran Lingkungan (Studi Pada Petani Cabai di Kecamatan Wuluhan Kabupaten Jember) (thesis). Jember: Universitas Jember; 2011.
16. Wahyuni S. Perilaku Petani Bawang Merah Dalam Penggunaan Dan Penanganan Pestisida Serta Dampaknya Terhadap Lingkungan (Studi Kasus Di Desa Kemukten, Kecamatan Kersana, Kabupaten Brebes). Semarang: Universitas Diponegoro; 2010.