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HEALTH BELIEF MODEL APPROACH TO MOSQUITO NEST ERADICATION BEHAVIOUR (PSN) IN DHF INCIDENCE IN CIPAMOKOLAN HEALTH CENTRE ENVIRONMENT

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Abstract

Indonesia until July 2020 reached 17,700 cases. There are 10 provinces that reported the highest number of cases, namely in West Java 10,772 cases, Bali 8,930 cases, East Java 5,948 cases, NTT 5,539 cases, Lampung 5,135 cases, DKI Jakarta 4,227 cases, NTB 3,796 cases, Central Java 2,846 cases, Yogyakarta 2,720 cases, and Riau 2,255 cases. Meanwhile, in 2019 the number of cases was very high at 112,954. In addition, the number of deaths throughout Indonesia reached 459. However, the number of cases and number of deaths in 2020 is still low when compared to 2019. In 2019 the incidence of Dengue Fever (DHF) in West Java was high at 23,296 people, with 145 deaths. In 2019 the incidence of Dengue Fever (DHF) was still a problem in Bandung City, it could potentially cause an Extraordinary Event (KLB). This study aims to determine the relationship between the Health Belief Model (Vulnerability, Frailty, Cues to Action, Benefits and Barriers) with Mosquito Nest Eradication Behaviour. This research was conducted with quantitative research using Cross Sectional, the sampling technique used was Stratified random sampling technique. In the results of this study, one variable was found to be related, namely the benefit variable with the results of chi square analysis obtained a p value of 0.000 (P value ≥ 0.05). The conclusion of this study is that most people in the cipamokolan puskesmas environment have vulnerable, severe, perform actions, are not useful and are hampered by PSN behaviour.

Keywords: Health Belief Model, Behaviour, Mosquito Nest Eradication, DHF

Introduction

A public health problem in Indonesia that until now often causes Extraordinary Events (KLB) with a large mortality rate is the disease.Fever.berdarah.Dengue (DHF). To date, there is no vaccine or drug to treat dengue virus. Thus, preventive measures are the primary and most effective strategy to control dengue fever(1) . Several regions report the number of cases each year, in 2015 there were 3.2 million cases with the worst outbreak in Delhi India since 2006 with more than 15,000 cases. 2016 was characterised by major dengue outbreaks around the world. The Americas region reported more than 2.38 million cases, of which Brazil alone contributed slightly less than 1.5 million cases, about 3 times higher than in 2014. 1032 dengue cases and deaths were also reported in the region. Region 2 Western Pacific reported over 375,000 suspected dengue cases in 2016, of which the Philippines reported 176,411 and Malaysia 100 028 cases, representing a similar burden to the

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previous year for both countries. In the Africa Region, Burkina Faso reported the 1eseh dengue outbreak with 1061 probable cases.

Whereas in 2017, a significant decrease was reported in the number of dengue cases in the Americas from 2,177,171 cases in 2016 to 584,263 cases in 2017. However, Panama, Peru, and Aruba were countries that recorded an increase in the number of cases during 2017(2) . Based on data from the Ministry of Health in 2020, dengue fever in Indonesia until July 2020 reached 17,700 cases. There are 10 provinces that reported, the highest number of cases were in West Java 10,772 cases, Bali 8,930 cases, East Java 5,948 cases, NTT 5,539 cases, Lampung 5,135 cases, DKI Jakarta 4,227 cases, NTB 3,796 cases, Central Java 2,846 cases, Yogyakarta 2,720 cases, and Riau 2,255 cases. Meanwhile, in 2019 the number of cases was very high at 112,954. In addition, the number of deaths throughout Indonesia reached 459. However, the number of cases and the number of deaths in 2020 is still low when compared to 2019. (3). According to data from the West Java Health Office in 2019, the incidence of dengue fever (DHF) in West Java was high at 23,296 people, with 145 deaths. While in 2018, the number of Dengue Fever sufferers in West Java in 2018 was 11,107 sufferers, with 55 deaths declared dead due to Dengue Fever (DHF) (West Java DHO, 2021) . In 2019 the incidence of Dengue Fever (DHF) is still a problem in Bandung City, it can potentially cause an Extraordinary Event (KLB). The number of cases obtained in 2018 was around 2,826 cases, 7 of which died. And in 2019 the incidence of Dengue Fever (DHF) had a total of 4,424 cases, 14 of whom died. The incidence of Dengue Fever (DHF) in 2019 was greater than in 2018. Meanwhile, the highest distribution of dengue fever incidence in 2019 was in Coblong sub-district with 189 cases, followed by Buahbatu with 180 cases, and Rancasari with 143 cases. (5).

Based on data from the Bandung City Health Office, in 2020 Cipamokolan Health Centre had 143 cases of Dengue Fever. The number of cases in the Cipamokolan Health Centre environment based on gender data is, 77 cases of men and 66 cases of women. The Case Fatality Rate in 2020 of 0.47% was greater than in 2019 which was 0.32% with an increase of 0.15% And there was a community where 1 person died in 2019 in Manjahlega Village(6) . This study aims to determine the relationship between the Health Belief Model (Vulnerability, Fragility, Cues to Action, Benefits and Barriers) with Mosquito Nest Eradication Behaviour (PSN) in the Cipamokolan Puskesmas environment.

Methods

This research was conducted with quantitative research using *Cross Sectional*. This research was conducted at Cipamokolan Health Centre, Bandung City. This research time starts from October 2021. The population of this study were 6,875 families in Manjahlega Village. Sampling was carried out using the known Population (N) formula and obtained a sample of 67 families. The sampling technique used is the *Stratified random sampling* technique(7) . Where researchers divide the target population based on class strata. This study took a sample size from each RW and calculated a proportional allocation with the following formula:,

$$nh = \frac{Nh}{N} \times n$$

Figure 1. Sample Calculation Formula

In this study, there are 16 RWs with their respective sample sizes. The following are the results of the *proportional* allocation calculation per RW:

RW	$nh = \frac{Nh}{N} \times n$	Jumlah
1	$\frac{366}{6.875} \times 67$	4
2	$\frac{472}{6.875} \times 67$	4
3	$\frac{411}{6.875} \times 67$	4
4	$\frac{573}{6.875} \times 67$	5
5	$\frac{234}{6.875} \times 67$	3
6	$\frac{279}{6.875} \times 67$	3
7	$\frac{382}{6.875} \times 67$	3
8	$\frac{553}{6.875} \times 67$	5
9	$\frac{212}{6.875} \times 67$	3
10	$\frac{316}{6.875} \times 67$	3
11	$\frac{232}{6.875} \times 67$	3
12	$\frac{779}{6.875} \times 67$	7
13	$\frac{823}{6.875} \times 67$	8
14	$\frac{321}{6.875} \times 67$	4
15	$\frac{374}{6.875} \times 67$	3
16	$\frac{546}{6.875} \times 67$	5
TOTAL		67

Figure 2. Sample calculation results

Primary data in this study is data obtained directly by conducting measurement tools such as conducting interviews, distributing questionnaires to be filled in by respondents and making direct observations of objects. While secondary data in this study can be obtained from data collection institutions such as the Health Office and Puskesmas. nstruments used to obtain the data needed in this study are: This questionnaire consists of 6 sections, namely: (1) Vulnerability (2) Severity (3) Action Cues (4) Benefits (5) Barriers (6) Mosquito Nest Eradication (PSN).

Results

The results of research and data analysis that has been conducted in Manjahlega Village, Rancasari District, Bandung City on 67 Respondents. The data obtained is primary data collected directly by conducting observations and interviews and filling out questionnaires. Before categorising the data as a *cut off point* determinant of research data, it is necessary to test normality. By using the *Skewness* technique, with the calculation of *statistical skewness* divided by std *error skewness*. Data is said to be normal if it is in the range of values -2 to 2. If the data is normally distributed then use the mean approach, but if the data is not normally distributed then use the median approach.

Table 1. The relationship between the Health Belief Model (Vulnerability, Severity, Cues to Action, Benefits and Barriers to PSN Behaviour in the Cipamokolan Puskesmas Environment

Factors	PSN behaviour						P-Value	POR (95% CI)
	Doing		Not doing		Total			
	n	%	n	%	n	%		
Vulnerability								
Vulnerable	21	31,3	18	26,9	39	100		
Not Vulnerable	11	16,4	17	25,4	28	100	0,353	
Total	32	47,8	35	52,2	67	100		
Severity								
Severe	23	34,3	25	37,3	48	100		
Not Severe	9	13,4	10	14,9	19	100	1,000	
Total	32	47,8	35	52,2	67	100		
Cue Action								
Taking Action	25	37,3	25	37,3	50	100		
No Action	7	10,4	10	14,9	17	100	0,728	
Total	32	47,8	35	52,2	67	100		
Benefits								
Helpful	26	38,8	5	7,5	31	100		
Not Helpful	6	9,0	30	44,8	38	100	0,000	26,000 (95,194 - 7,101)
Total	32	47,8	35	52,2	67	100		
Barriers								
Hindered	22	32,8	17	25,4	39	100		
Uninhibited	10	14,9	18	26,9	28	100	0,154	
	32	47,8	35	52,2	67	100		

Based on table 1. above shows that most of the Heads of Families (KK) who have a vulnerable category of implementing the 3M PLUS PSN are 31.3% vulnerable to not implementing the 3M PLUS PSN by 26.9%. Meanwhile, households that have a category that is not vulnerable to carry out the 3M PLUS PSN are 16.4% and not vulnerable to not carry out the 3M PLUS PSN by 26.9%. The difference in proportion between vulnerable and not vulnerable is 14.9%. The results of the chi square analysis obtained a p value of 0.353 (P value ≥ 0.05) then H0 failed to be rejected, which means that there is no significant relationship between vulnerability and PSN behaviour in the Cipamokolan Puskesmas environment.

Family heads (HH) who had a severe category of implementing the 3M PLUS PSN were 34.3% and 37.3% who did not carry out the 3M PLUS PSN. Meanwhile, HHs that had a category that was not severe in carrying out the 3M PLUS PSN were 13.4% and not vulnerable to not carrying out the 3M PLUS PSN were 14.9%. The difference in proportion between severe and not severe is 20.9%. The results of chi square analysis obtained a p value of 1.000 (P value ≥ 0.05) then H0 failed to be rejected, which means that there is no significant relationship between severity and PSN behaviour.

Family heads who have the category of taking action to carry out the 3M PLUS PSN were 37.3% who did not carry out the 3M PLUS PSN by 37.3%. Meanwhile, household heads who had a category of not taking action to implement the 3M PLUS PSN were 10.4% and not taking action not to implement the 3M PLUS PSN were 14.9%. The difference in proportion between taking action and not taking action is 26.9%. The results of chi square analysis obtained a p value of 0.728 (P value ≥ 0.05), so H0 failed to be rejected, which means that there is no significant relationship between cues to action and PSN behaviour.

HHs that have a useful category of implementing the 3M PLUS PSN are 38.8% useful for not implementing the 3M PLUS PSN by 7.5%. Meanwhile, households that have a category that is not useful for implementing the 3M PLUS PSN are 9.0% and not useful for not implementing the 3M PLUS PSN are 44.8%. The difference in proportion between useful and not useful is 29.8%. The results of the chi square analysis obtained a p value of 0.000 (P value ≥ 0.05) then H0 is rejected, which means that there is a significant relationship between benefits and PSN behaviour in the Cipamokolan Puskesmas environment. The result of POR = 26.000, which means that families who have a category that is not useful have a 26x chance of not carrying out PSN behaviour compared to families who have a useful category.

HHs that have a category that is hampered to carry out the 3M PLUS PSN are 32.8% hampered not to carry out the 3M PLUS PSN by 25.4%. Meanwhile, HHs that had a category that was not inhibited from carrying out the 3M PLUS PSN were 14.9%, not inhibited from not carrying out the 3M PLUS PSN by 26.9%. The difference in proportion between inhibited and not inhibited is 17.9%. The results of the chi square analysis obtained a p value of 0.154 (P value ≥ 0.05) then H0 failed to be rejected, which means that there is no significant relationship between obstacles and PSN behaviour in the Cipamokolan Puskesmas environment.

Discussion

Relationship between barriers and NSP behaviour

The perception of each community towards something varies greatly(8) . This is in accordance with the theory expressed by Walgito 2010 which states that perception is individual or subjective, so even though the perceived object (stimulus) is the same, but from the feelings and experiences of different individuals it will cause different perceptions between one person and another(9) . According to the researcher's assumption, vulnerability can be related to 3M Plus PSN behaviour because the implementation of PSN is a behaviour, human behaviour itself is a reflection of various psychological symptoms such as perception in addition to other factors such as knowledge, desire, will and so on. Therefore, a person who has a vulnerable category will develop a supportive attitude and eventually a behaviour to carry out the 3M Plus PSN. Conversely, if a person has a category that is not vulnerable, the attitude generated will also not be supportive, which ultimately does not occur behaviour not to carry out the 3M Plus PSN. Based on the results of research conducted on vulnerability by(10) , it shows that there is no significant relationship between vulnerability and PSN 3M PLUS behaviour because this can be seen through the large number of respondents who agree that dengue fever can attack anyone without exception. And similarly, Attamimy found that there was no relationship between vulnerability and 3M PLPUS PSN behaviour. Indicated by the results of p-value 0.201 > 0.05 with POR = 0.401 .(11)

Relationship between Severity and NSP Behaviour

Based on the Health Belief Model theory, severity refers to an individual's subjective judgement of the seriousness of a health problem from its potential consequences. Consequences can occur from health problems such as medical consequences (death, disability and pain), psychological consequences (depression, anxiety and fear) and social consequences (impact on work, family and social relationships)(12) . The Health Belief Model theory states that if more consequences are believed to occur, the greater the perception that the problem is a threat and makes individuals decide to take action(13) . According to the researcher's assumption, severity can be related to the behaviour of PSN 3M Plus because the implementation of PSN is a prevention of dengue fever. Therefore, someone who has a severe category will have an attitude that will support and eventually arise the behaviour to want to carry out the 3M Plus PSN. Conversely, if someone has a category that is not

severe, the attitude generated will also not be supportive, which ultimately will not occur behaviour not to carry out the 3M Plus PSN. Based on the results of the severity study, it shows that there is no significant relationship between severity and 3M PLUS PSN behaviour because this can be seen through the large number of respondents who agree that dengue fever is a serious disease that can cause death. The greater the severity of a person against dengue fever, the better the prevention efforts will be(10) . This research is also in line with that conducted by(10) where it was found that there was no relationship between severity and PSN 3M PLPUS behaviour. This is indicated by the p-value result of 0.200> 0.05.

Relationship between Action Cues and NSP Behaviour

Cues to action are one of the factors needed to encourage individual engagement in health behaviour. Cues to action can also be interpreted as environmental encouragement for individuals who have healthy behaviours.(14) . Cues to action. The cues referred to in this case are in the form of external and internal factors, such as messages in the mass media, advice or recommendations from friends or other family members, sociodemographic aspects such as education level, living environment, parental care and supervision, association with friends, religion, ethnicity, economic, social and cultural conditions, selfefficacy, namely a person's belief that he has the ability to perform or display a certain behaviour. According to the researcher's assumption, cues can be related to the 3M Plus PSN behaviour because the implementation of PSN is an activity that can be carried out independently or in collaboration by the community itself. Therefore, a person who has a category of performing PSN behavioural actions will have an attitude that will be related to PSN such as carrying out activities and carrying out other prevention. Conversely, if a person has a category of not taking action, the attitude generated will also not be supportive, which ultimately will not occur behaviour not to carry out the 3M Plus PSN. Based on the results of the research on cues to action, it shows that there is no significant relationship between cues to action and 3M PLUS PSN behaviour. Because this can be seen through the number of respondents who get information about PSN through various media both print and electronic. The more information an individual receives about PSN, the better the prevention efforts will be(15) . And similarly, conducted by Rizka Savira Musta'inah in Surabaya, it was found that there was no relationship between the cue to act and the PSN 3M PLPUS behaviour. Indicated by the results of p-value 0.282> 0.05)(10) The conclusion is that there is no significant relationship between cues to action and 3M PLUS PSN behaviour in the cipamokolan health centre environment.

Relationship between Action Cues and NSP Behaviour

According to Edberg, (2010) Perceived benefits are positive results that a person believes will result from action. For example, he thinks taking preventive action will be beneficial. This assessment of perceived benefits is based on: Age, gender, cultural background, personality, social class, social pressure, knowledge and experience about the problem(16) . According to the researcher's assumption, cues can be related to 3M Plus PSN behaviour because the implementation of PSN is an activity that can be carried out independently or in collaboration by the community itself. Therefore, a person who has a category of carrying out PSN behavioural actions will have an attitude that will relate to PSN such as carrying out activities and carrying out other prevention. Conversely, if someone has a category of not taking action, the attitude generated will also not be supportive, which ultimately will not occur behaviour not to carry out 3M Plus PSN. Based on the results of the benefit study, it shows that there is a significant relationship between benefits and PSN behaviour. It can be seen that respondents feel the benefits of PSN efforts in the form of a reduced risk of DHF disease. This benefit causes changes in a person's behaviour which will affect the prevention efforts made against a disease (Sutriyawan, 2021) . Indicates that respondents with high perceived benefits will

make good prevention efforts. Perceived benefit is a person's assumption of the value of behaviour change that can reduce the risk of disease. The greater a person's perception of the perceived benefits of an action, it will affect a person's willingness to continue making these prevention efforts .(18)

Relationship between barriers and NSP behaviour

Barriers are an individual's view or judgement of how big the obstacles are to taking an action. An action may not be taken by an individual, even though the individual believes that there are benefits to taking the action. This could be due to the barriers themselves. Barriers refer to the characteristics of the measurement of a precaution such as troublesome, expensive, unpleasant or even painful. These characteristics may cause individuals to avoid taking precautions that should be taken. Perceived barriers to taking action include perceived inconvenience, burden and danger (e.g. side effects of medical procedures)(19) . According to the researcher's assumption, barriers can be related to the 3M Plus PSN behaviour because the implementation of PSN is an activity that can be carried out independently or in collaboration by the community itself. Therefore, someone who has a category that is inhibited from carrying out PSN behaviour will have an attitude that will be related to PSN. Conversely, if someone has a category that is not inhibited, an attitude will arise that will not support, which in turn will not occur behaviour not to carry out the 3M Plus PSN. Based on the results of the benefit study, it shows that there is a significant relationship between benefits and 3M PLUS PSN behaviour. It can be seen that respondents feel the benefits of PSN efforts in the form of a reduced risk of DHF disease. there are also barriers that can affect DHF prevention behaviour. For example, financial constraints, limited access to resources, and negative perceptions of preventive measures can be barriers to the adoption of consistent preventive behaviours(20) . These benefits lead to changes in a person's behaviour that will affect prevention efforts made against a disease(10) . And similarly conducted by Rizka Savira Musta'inah in Surabaya found that there is a relationship between benefits and PSN 3M PLPUS behaviour. This is indicated by the p-value result of 0.032> 0.05.

Conclusion

Based on the results of research that has been conducted related to the Health Belief Model Approach to Mosquito Nest Eradication Behaviour (PSN) in the Cipamokolan Puskesmas environment, the following conclusions are obtained:

1. Most of the community in the cipamokolan puskesmas environment have vulnerable, severe, do action, not useful and inhibited categories of PSN behaviour.
2. Most people in the cipamokolan neighbourhood have not done PSN

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