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Effectiveness of Curry Leaf Extract (Murraya koenigii) as a Natural Larvicidal Against Culex Sp Mosquito Larvae Mortality

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ABSTRACT
The Culex genus of mosquitoes makes up the majority of the mosquitoes in our area. The West Nile virus, filariasis, Japanese encephalitis, and St. Louis encephalitis are only a few of the illnesses spread by this mosquito. Culex quinquefasciatus, a mosquito in the genus Culex that is known to transmit the diseases chikungunya and filariasis, is a significant mosquito species. The study's objective was to ascertain whether Culex Sp mosquito larvae died after receiving doses of curry leaf extract (Murraya koenigii) of 2 ml/200 ml, 4 ml/200 ml, and 8 ml/200 ml. Three hundred Culex species larvae served as the study's subjects. The One Way ANOVA test was employed for data analysis. The outcomes shown that Culex sp. larval mortality in the treatment Curry leaf extract (Murraya koenigii) doses of 2 ml/200 ml of water were 16.7%, 4 ml/200 ml of water were 21.7%, and 8 ml/200 ml of water were 25%. One way ANOVA analysis yielded a p value of 0.003 (0.005), indicating that curry leaf extract (Murraya koenigii) is effective as a natural larvi The dose that is most successful, with a p value of 0.001, is 4 ml/200 ml of water. It is envisaged that the community will be able to employ and make use of curry leaf extract (Murraya koenigii) as a substitute for killing Culex sp. larvae.

Keywords: Curry leaves (Murraya koenigii), extraction, Culex sp. larvae

BACKGROUND

Mosquitoes are blood-sucking insects that spread a variety of illnesses to people and animals all over the world. There are more than 2,500 different mosquito species in the globe, yet the majority of them do not spread disease. One of the species that still remains and is regularly encountered is Culex sp[1].

The Culex genus of mosquitoes makes up the majority of the mosquitoes in our area. The ability of several of these mosquito species to spread disease has been demonstrated. Culex works as a vector of major diseases such as West Nile Virus, filariasis, Japanese encephalitis, St. Louis encephalitis. An important mosquito in the genus Culex is Culex quinquefasciatus which is known as a vector for filariasis and chikungunya[2].

As an effort to eliminate filariasis by 2020, the World Health Organization (WHO) developed a global agreement (The Global Goal of Elimination of Lymphatic Filariasis as a Public Health issue by The Year 2020). (The Global Goal of Elimination of Lymphatic Filariasis as a Public Health problem by The Year 2020). In the world there are 1.3 billion people who are at risk of getting filariasis or also known as elephantiasis in more than 83 nations and 60% of cases are in Southeast Asia. A total of 34 Provinces in Indonesia reported 12,677 cases of filariasis in 2017; Aceh came in fifth with 591 cases[3].

The government has made different attempts to address diseases caused by mosquitoes, mainly filariasis, such as breaking the chain of transmission of filariasis by distributing Mass Prevention Drugs (POPM) for filariasis in endemic areas once a year for five consecutive years. Filariasis was not present in Banda Aceh City's Health Profile (0 cases)[4].

Breaking the chain of the primary illness source is where control efforts for the Culex sp vector must begin. At present, the community is reluctant to work together to clear the polluted water gutters which are regarded the main source of breeding of Culex Sp mosquito larvae. Contrary to Aedes aegypti larvae, which prefer to live in areas with clean water, such as a bathtub, Culex sp. larvae prefer the gut as

their primary breeding location or habitat. Therefore, insect vector control can be done mechanically, biologically or chemically[2].

However, thus far Indonesian people have largely solely employed insecticides to control vectors. The use of synthetic insecticides is known to be quite effective, reasonably inexpensive, easy and practical but can have a harmful influence on the environment[5]. In addition, insect life grows resistant to insecticides. One approach to tackle this challenge is to hunt for biological elements that are more selective and safe[6]

Botanical insecticides are one of the alternative pesticide controls that are viable to produce because insecticidal substances from these plants are easily degraded (bio-degradable) in the environment and are largely harmless for humans and the surrounding environment[7].

Plants or plants coming from nature and potential as vegetable pesticides such as curry leaves (Murraya koenigii) which include flavonoids, tannins, alkaloids, terpenes and saponins. Generally, curry leaves (Murraya koenigii) have a characteristic bitter taste due to the content of alkaloids and terpenes, have a foul smell and taste a little spicy which is considered capable of killing Culex Sp mosquito larvae, besides that they also contain lots of natural vitamins and minerals such as vitamins A, B, C, E. , amino acids, magnesium, and folic acid, which make the leaves of this spice excellent in health benefits. These plants or plants are rarely attacked by pests, hence they are extensively utilized as vegetable pesticide extracts in organic farming[8].

Research conducted by Ahdiyah (2015), evaluated mangkokan leaf extract (Nothopanax scutellarium) including flavonoids, saponins, coumarins, phenols, terpenes and alkaloids to kill Culex Sp. insect larvae. At varied concentration levels it was able to kill 50% of Culex sp larvae at a concentration of 1.338%. While the results of research by Lestari, et al (2015) regarding the use of various concentrations of ethanol extract of rambutan leaves (Nephelium lappaceum l.) on the mortality of Culex quinquefasciatus larvae at doses of 77%, 86%, 87%, 95%, 98% and 100% obtained the results that The ethanol extract of rambutan leaves has properties as a Culex Quinquefasciatus larvicidal and the effective concentration of ethanol extract of rambutan leaves as a larvicidal is 0.2%[9].

Meanwhile, Susanti et al(2015) .'s research concerning the larvicidal activity test of taro leaf extract (Alocasia indica Schott) on Culex sp mosquito larvae with parameters LC50 and LC95, which was calculated using the Reed and Muench method obtained results at an LC50 value for crude methanol extract of 0 .60 %, n-hexane fraction of 0.04%, The n-butanol percentage was 0.21%, and the ethyl acetate fraction was 0.22%. Crude methanol extract had an LC95 value of 1.06%, n-hexane fraction of 0.08%, ethyl acetate fraction of 0.11%, and n-butanol fraction of 0.44%[10].

So far no research has been identified on the biological benefits of curry leaf extract (Murraya koenigii) on the mortality of Culex sp mosquitoes, where practically all studies are related with food sources and health benefits. Based on the description above, the authors are interested in doing study to investigate the effectiveness of curry leaf extract (Murraya koenigii) as a natural larvicide against the mortality of Culex sp mosquitoes.

METHOD

This form of quasi-experimental study[11], with the subject being water Culex spinstar 3 larvae gathered from gutters or ditches as many as 300 larvae for 3 repeats with 4 treatment groups (25 larvae x 4 x 3 repetitions) (25 larvae x 4 x 3 repetitions). The stage of creating curry leaf extract (Murraya koenigii) employs maceration, the curry leaves (Murraya koenigii) are cut into small pieces and then dried without sunlight at room temperature ± for 2 days after drying the curry leaves are mixed till they crumble into powder. The blender's output was soaked for up to five days in 1,000 ml of alcohol (750 ml + 250 ml), filtered using a funnel, placed on a filter paper mat, and evaporated at room temperature at the research location (changes in extract molecules). Let stand for 30 minutes and the results are collected in the form of curry leaf extract (Murraya koenigii) (Murraya koenigii).

The experimental implementation stage is to provide 4 sample containers with a diameter of ± 15 cm (3 for treatment and 1 for control) then introduce 25 larvae into the treatment container by adding 2 ml of extract/200 ml of water. After that, put 25 larvae into the treatment container by adding 4 ml/200 ml water extract, put 25 larvae into the treatment container by adding 8 ml/200 ml water extract and put 25 larvae into the control container without adding extract. After then, observe the death of Culex Sp larvae every 1 hour to 8 hours. After 1x24 hours, note the mortality of Culex Sp larvae (who do not move when

poked with a needle in the neck or siphon region because their stiff bodies prevent them from reaching the water's surface) (treatment and control groups). Repeat the same treatment three times each iteration (treatment and control) (treatment and control)[12].

RESULTS

Based on research that has been done on the usefulness of curry leaf extract (Murraya koenigii) as a natural larvicide against the death of Culex sp. insect larvae. So the following research results were obtained:

Table 1
Results of Culex sp Mosquito Larvae Mortality Study After Giving Curry Leaf Extract (Murraya koenigii) 2 ml/200 ml water, 4 ml/200 ml water and 8 ml/200 ml water

No	Treatment	Culex sp Mosquito Larval Mortality Amount Based on Dosage								
		Control	%	2 ml/200 ml water	%	4 ml/200 ml water	%	8 ml/200 ml water	%	Total
1.	I	5	20	18	72	19	76	25	**100**	**67**
2.	II	3	12	22	88	24	96	25	**100**	**74**
3.	III	3	12	10	40	22	88	25	**100**	**60**
Total		**11**	**44**	**50**	**200**	**65**	**260**	**75**	**300**	**201**
Average		**3,6**	**14,4**	**16,7**	**66,8**	**21,7**	**86,8**	**25**	**100**	**67**

2019 primary data processing source

Table 1 reveals that the findings of Culex Sp mosquito larvae mortality after administration of curry leaf extract (Murraya koenigii) were most plentiful at a dose of 8 ml/200 ml of water, namely 75 larvae (25% mortality rate), while the least was at dose 2. 50 larvae require ml/200 ml of water, or an average 16.7%. And the Culex sp. mortality rate larvae. Treatment II had the greatest impact, whereas Treatment III had the least.

Additionally, the abot adjustment table is tabulated with the aforementioned results. The abbot correction table is provided as follows:

Table 2.
Abbott Formula Correction Table

No	Treatment	Culex sp Mosquito Larval Mortality Amount Based on				
		Control	2 ml/200 ml water	4 ml/200 ml water	8 ml/200 ml water	Total
1.	I	2,99	15,99	16,99	22,99	**58,96**
2.	II	0,99	19,99	21,99	22,99	**65,96**
3.	III	0,99	7,99	19,99	22,99	**51,96**
Total		**4,97**	**43,97**	**58,97**	**68,97**	**176,8**
Average		**1,66**	**14,7**	**19,7**	**22,9**	**58,9**

2019 primary data processing source

The average correction value for the dose of curry leaf extract (Murraya koenigii) varies between doses of 2 ml/200 ml of water, 4 ml/200 ml of water, and 8 ml/200 ml of water, according to Table 2 above.

The research results that have been obtained regarding the effectiveness of curry leaf extract (Murraya koenigii) as a natural larvicide against the death of Culex sp mosquito larvae at doses of 2 ml/200 ml water, 4 ml/200 ml water and 8 ml/200 ml water respectively were then carried out statistical test ANOVA one way (one way) with (α = 0.05). The ANOVA statistical analysis produced the following outcomes:

Table 3
Results of One Way Anova Test (One Way) Curry Leaf Extract (Murraya koenigii) With Doses of 2 ml/200 ml of water, 4 ml/200 ml of water and 8 ml/200 ml of water As Natural Larvicides Against Death of Culex sp Mosquito Larvae

Variables	Mean	SD	95% CI			P - Value
Control	3,67	1,155	0,80	-	6,54	0,003
2 ml/200 ml water	20,67	3,786	11,26	-	30,07	
4 ml/200 ml water	23,67	1,528	19,87	-	27,46	
8 ml/200 ml water	19,00	7,937	-0,72	-	38,72	
Total	**16,75**	**8,946**	**11,07**	-	**22,43**	

2019 primary data processing source

Based on table 3 above, the p value (0.003) <0.05 is achieved, therefore Ho is rejected and Ha is accepted. That is, there is a substantial difference in curry leaf extract (Murraya koenigii) with a dose of 2 ml/200 ml of water, 4 ml/200 ml of water and 8 ml/200 ml of water as natural larvicide on the death of Culex sp. insect larvae. After an LSD test was carried out to find out the most significant dose, there was an average difference in the effectiveness of each dose of curry leaf extract (Murraya koenigii) between doses of 2 ml/200 ml of water, 4 ml/200 ml of water and 8 ml/200 ml water. The results of the investigation in the table above reveal that the highest effective dose as a natural larvicide against the mortality of Culex sp mosquito larvae is 4 ml/200 ml of water with a p value (0.001). (0.001).

DISCUSSION

While using a dose of 4 ml/200 ml of water extract of curry leaves (Murraya koenigii) showed that the results of the death of Culex sp mosquito larvae in the treatment were as many as 65 larvae and in the control there were 11 larvae, and using a dose of 8 ml/200 ml showed that the results of the death of Culex sp mosquito larvae in the treatment were as many as 50 larvae and

Mosquitoes of the genus Culex sp are mosquitoes that are extensively found around us. The ability of several of these mosquito species to spread disease has been demonstrated. Important diseases like the West Nile Virus, filariasis, Japanese encephalitis, and St. Louis encephalitis are spread by Culex. Culex quinquefasciatus, a mosquito in the genus Culex that is notorious for transmitting chikungunya and filariasis, is a significant mosquito[2,13].

Because chemical mosquito control has an effect on people, biological control is thought to be the most effective against Culex sp mosquito mortality because it doesn't. Curry leaves (Murraya koenigii) often have a characteristic bitter flavor due to the amount of alkaloids and terpenes, have a foul odor and have a somewhat spicy taste which are thought capable of killing Culex Sp mosquito larvae. These plants or plants are frequently used in organic farming as vegetable pesticide extracts since pests rarely attack them[14].

This is consistent with Puri's 2009 study on the impact of curry leaf extract (Murraya koenigli (L.) Spreng) on the demise of Culex sp mosquito larvae, which revealed a strong correlation between the demise of Culex sp mosquito larvae and greater doses of curry leaf extract (p value 0.005).

Curry leaves (Murraya koenigii) are widely available and may grow anywhere, which leads researchers to believe that they have a significant impact on lowering Culex Sp mosquito larvae. As a result, the composition of curry leaves (Murraya koenigii) affects how long Culex species live. mosquitoes. However, the extraction process must be carried out in line with the implementation procedure so as to produce successful results when utilized as a natural larvicide[15]. The death of Culex sp. larvae won't be significantly affected or impacted if the extraction rate is lower than the water combination, but vice versa. The effect of each dose administered on death varies.

According to the one way ANOVA analysis's findings, where the p value (0.003) 0.05, Ho is disregarded and Ha is accepted. This indicates that there is a significant difference in the effectiveness of curry leaf extract (Murraya koenigii) against the death of Culex sp. mosquito larvae between doses of 2 ml/200 ml of water, 4 ml/200 ml of water, and 8 ml/200 ml of water. However, in this case, dose 4 ml/200 ml is the most effective dose because the results of the analysis of the research

The efficiency of employing curry leaf extract (Murraya koenigii) to lower the population density of Culex sp mosquitoes is quite significant and can be verified in the field as a natural larvicide. Researchers estimate that curry leaves (Murraya koenigii) have a major function in lowering the population density of Culex sp. mosquitoes. So that direct prevention of the chain of diseases caused by Culex sp mosquitoes is regarded the most effective with biological control. Apart from the leaves being easy to collect in the surrounding area, using the extract takes a little time because you have to go through various phases of the process to produce the liquid extract. Besides that, the spread of Culex sp larvae in dirty locations like as drains, swamps and others also requires the community to take mutual cooperation in keeping the environment clean.

CONCLUSION

The average mortality of Culex sp mosquito larvae at a dose of 2 ml/200 ml of curry leaf extract water (Murraya koenigii) was 16.7%, a dose of 4 ml/200 ml of curry leaf extract water (Murraya koenigii) was 21.7%, dose of 8 ml/200 ml of water extract of curry leaves (Murraya koenigii) was 25% and the average mortality of Culex sp mosquito larvae in the control was 3.6%. The findings of the data analysis revealed that a dose of 4 ml/200 ml of water was the most efficient amount of curry leaf extract (Murraya koenigii) to use as a natural larvicide to kill Culex sp. mosquitoes, with a p value of 0.001.

REFERENCES

1. Handiny NF, KM M, Gusni Rahma SKM, Epid M, Rizyana NP, KM M. *Buku Ajar Pengendalian Vektor*. Ahlimedia Book; 2020.
2. Sholichah Z. Ancaman dari nyamuk Culex sp yang terabaikan. *BALABA J LITBANG Pengendali PENYAKIT BERSUMBER BINATANG BANJARNEGARA*. Published online 2009:21-23.
3. Aceh D. Profil Kesehatan Aceh Tahun 2017. *Banda Aceh*. Published online 2018.
4. Pramono MS, Maryani H, Wulandari P. Analisis Kasus Penyakit Filariasis di Provinsi Nangroe Aceh Darussalam Dengan Pendekatan Metode Zero Inflatedpoisson (ZIP) Regression. *Bul Penelit Sist Kesehat*. 2014;17(1):35-44.
5. Zulfikar Z, Kartini K, Sudiarto D, Aditama W. Pengaruh Insektisidal Gorden Celup Deltametrin terhadap Kematian Anopheles spp. *BALABA J LITBANG Pengendali PENYAKIT BERSUMBER BINATANG BANJARNEGARA*. Published online 2018:191-200.
6. Ghiffari A, Fatimi H, Anwar C. Deteksi Resistensi insektisida Sintetik Piretroid pada Aedes aegypti (L.) Strain Palembang Menggunakan Teknik Polymerase Chain Reaction. *Aspirator*. 2013;5(2):37-44.
7. Zulfikar Z. Pengaruh Ekstrak Daun Bunga Tahi Ayam (Tagetes erecta) Terhadap Kematian Larva Aedes aegypti. *Sel J Penelit Kesehat*. 2019;6(2):66-73.
8. Syahrizal, Junaidi Z. Natural Color Additive as a Substitute for Rhodamine B Synthetic Color Additive Used in Ice Cream Sold In Lampeunurut Village, Aceh Besar District, Indonesia. *Int J Sci Healthc Res*. 2020;5(3):35-53.
9. Lestari D, Nuryati A, Nuryani S. Penggunaan Berbagai Konsentrasi Ekstrak Ethanol Daun Rambutan (Nephelium Lappaceum L.) terhadap Mortalitas Larva Culex Quinquefasciatus. *J Teknol Lab*. 2014;3(1):46-51.

10. Susanti M, Kuncoro H, Rijai L. Uji Aktivitas Larvasida Ekstrak Daun Keladi Birah (Alocasia indica Schott) Terhadap Larva Nyamuk Culex sp. *J Sains dan Kesehat*. 2015;1(1):5-10.
11. Supranto J. *Teknik Sampling Untuk Survei Dan Eksperimen*. Penerbit PT Rineka Cipta; 2010.
12. Dahlan MS. *Statistik Untuk Kedokteran Dan Kesehatan*. Edisi 4. Salemba Medika; 2016.
13. Poolprasert P, Pama W, Chammui Y, Thongchai W. Screening of Medical Plants Extracts for Larvicidal Activity against Culex quinquefasciatus (Diptera : Culicidae). *Int Conf Herb Tradit Med*. 2015;(Htm):228-230.
14. Handral HK, Pandith A, Shruthi SD. A review on Murraya koenigii: multipotential medicinal plant. *Asian J Pharm Clin Res*. 2012;5(4):5-14.
15. Aditama W, Zulfikar SFY. The effectiveness of arabica coffee (Coffea arabica L) grounds on mortality and growth of Aedes aegypti Larva. *Int J Mo*. 2019;6:34-37.

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FACTORS RELATED TO ELDERLY PRESENCE TO ELDERLY POSYANDU IN THE WORKING AREA OF MEURAXA PUSKESMAS, BANDA ACEH CITY

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ABSTRACT

Elderly Posyandu is an integrated service post for the elderly at the village/kelurahan level within the working area of each health center. Elderly who are not active in attending health services at the elderly Posyandu, their health conditions cannot be monitored properly and it is feared that they will threaten their lives with various diseases, both infectious and non-infectious, which are harmful to the body. There are only 29% of elderly who are active in attending the elderly at the Posyandu in the Meuraxa Health Center UPTD Working Area in 2021, which is still far from the government's target of 70%. The purpose of this study was to determine the factors associated with the presence of elderly Keposyandu in the working area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2022. This type of research is descriptive analytic with cross-sectional. The sampling technique in this study was accidental sampling. The sample in this study was 44 elderly aged ≥ 55 years. The research was conducted from March 28 to June 17, 2022. Data collection was carried out using interviews using a questionnaire, then statistical tests were carried out with the chi-square test, and data were analyzed by univariate and bivariate.

Keywords: Elderly Presence, Knowledge, Education, Home Distance, Role Health Workers, Family Support, Role of Cadres and Motivation

PRELIMINARY

The Elderly is an age group of humans who have entered the final stages of their life phase. The group that is categorized as elderly will experience a process called the Aging Process or the aging process. Old age as the final stage of the life cycle is a normal stage of development that will be experienced by every individual who reaches old age. This is a reality that cannot be avoided by every human being (Wikananda 2015).

Besides being an indicator of the success of development, this increase in the number of elderly people is also a challenge in development. If these problems are not anticipated, the development process may experience various obstacles. Therefore, to become a healthy, productive, and independent elderly, you must start with a healthy lifestyle and better prepare for old age. Thus, the target of elderly problems is not only the elderly themselves but also the pre-elderly population (Kemenkes RI, 2010).

Globally, in 2013 the proportion of the population aged over 60 years was 11.7% of the total world population and it is estimated that this number will continue to increase in line with increasing life expectancy. WHO data shows that in 2000 the life expectancy of people in the world was 66 years, in 2012 it rose to 70 years and in 2013 it became 71 years. The proportion of elderly people in Indonesia is also increasing every year. WHO data in 2009 showed that the elderly amounted to 7.49% of the total population, in 2013 it became 7.69% and in 2015 the proportion of elderly people was found to be 8.1% of the total population (WHO, 2017).

The morbidity rate of the elderly population in Indonesia tends to increase from that year in 2011 the morbidity rate was 28.48%, in 2013 it was 29.98% and in 2014 the morbidity rate in the elderly population was 31.11%. This condition certainly must get the attention of various parties. The Elderly who experience illness will be a burden to families, communities, and even the government (Info datin, 2016).
Indonesia is included in the top five countries with the highest number of elderly people in the world. Based on the 2010 population census, the number of elderly people in Indonesia is 18.1 million people (7.6%) of the total population. In 2014, the number of elderly people in Indonesia was 18.781 million people and it is estimated that by 2025, the number will reach 36 million people (Kemeskes RI, 2017).

The Badan Pusat Statistik (BPS) shows an increase in life expectancy at birth from 69.8 years in 2010 to 70.9 years in 2017 and is expected to increase to 72.4 in 2035 and life expectancy in Aceh is 69. 7% (Ministry of Health RI, 2018). Based on data from the Badan Pusat Statistik (BPS), the percentage of elderly women in 2015 was 8.96% while the percentage of elderly men was 7.91%. Where the elderly absorbed by the Elderly Posyandu is only around 9.6 million people or around 40% spread over around 9 thousand Posyandu throughout Indonesia. Where data on elderly participation in participating in elderly Posyandu in 2015 is only around 45% of the total number of elderly people in Indonesia (Badan Pusat Statistik, 2017, 2017).

Based on data from the Banda Aceh City Health Office, elderly people in Banda Aceh City in 2016 totaled 30,334 people who received aged health services totaling 23,781 people with a percentage of 78.40%. In 2017 there were 9,297 people with a percentage of 78.11% and in 2018 there were 660 people with a percentage of 53.02%. Elderly who received health services from 2016 to 2018.The problem of the elderly (elderly) needs to get attention because the number continues to increase every year. This increase in the elderly population may be due to improved health services and increased life expectancy for the Acehnese. Rural elderly needs attention because it is estimated that 60% of the elderly live in rural areas. Elderly people in rural areas have very little access to healthcare facilities and healthy lifestyles (Profil Kesehatan Aceh, 2018).

Based on data from the Meuraxa Health Center UPTD, the number of elderly who came to the elderly Posyandu from 16 villages with a total of 2,306 elderly people in the working area of the Meuraxa Health Center UPTD consisted of men and women, in 2018 there were 670 people (29%) and in 2019 from January to June, there were 312 people (13.5%). From the proportion of elderly attendance in 2018 to 2019, there was a decrease in the presence of elderly Keposyandu.

In addition, based on Law no. 36 of 2009 concerning health, where healthcare efforts for the elderly must be aimed at maintaining the economy, and the government is obliged to ensure the availability of health services and facilitate the elderly group to be able to live independently and productively. For this reason, the government has launched health services that are implemented through the Puskesmas program by involving the participation of the elderly, families, community leaders and social organizations called the Elderly Integrated Service Post (Posyandu) or currently known as the Elderly Integrated Development Post (Posbindu).

According to Deni Dwi (2011), the activeness of the elderly in the elderly Posyandu activities affects the health level of the elderly. Therefore, the elderly are expected to be able to visit and be active in activities held by the elderly Posyandu so that the elderly get adequate health services and health education for their health needs in their old age. Older people are very susceptible to degenerative diseases such as hypertension, obesity, blockage of the heart vessels, and stroke. and 2 respondents said that they routinely made repeated visits to the Elderly Posyandu at the Puskesmas to carry out health checks because they received support from their families and the respondent's family accompanied them to come to the Puskesmas. From the results of the initial survey, it was concluded that there was still a lack of awareness of the elderly in utilizing the puskesmas or posyandu so many elderly people did not have regular health checks.

RESEARCH METHODOLOGY

This type of research is descriptive-analytic with cross-sectional. The sampling technique in this study was accidental sampling. The sample in this study was 44 elderly aged ≥ 55 years. The research was conducted from March 28 to June 17, 2022. Data collection was carried out using interviews using a questionnaire, then statistical tests were carried out with the chi-square test, and data were analyzed by univariate and bivariate.

RESULTS AND DISCUSSION

Table 1.1
Relationship of Knowledge with Elderly Presence to Posyandu Elders in Regions UPTD Work of the Meuraxa Health Center in Banda Aceh City in 2020

No	Knowledge	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	Well	20	80.0	5	20.0	25	100	0.001
2	Not enough	1	5,3	18	94.7	19	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attend the elderly posyandu 80.0% with good knowledge higher than those with less knowledge of only 5.3%, conversely the elderly who do not attend the posyandu elderly 94.7% knowledgeable less higher than those with knowledge good by 20.0%. The difference in these proportions statistically reached a significant level (P value 0.001), which indicated that there was a very significant relationship between knowledge and attendance of the elderly at the elderly Posyandu.

Table 1.2
The Relationship between Education and Elderly Attendance at the Elderly Posyandu in the Work Area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2020

No	Education	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	Base	1	9,1	10	90.9	11	100	0.007
2	Intermediate	16	59,3	11	40,7	27	100	
3	Tall	4	66,7	2	33,3	6	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attended the elderly Posyandu 66.7% with those with higher education compared to those with secondary education of 59.3% and those with basic education of 9.1%, while the elderly who did not attend the Posyandu elderly 90, 9% with primary education higher than those with secondary education of 40.7% and tertiary education of 33.3%. The difference in these proportions statistically reached a significant level (P value 0.007), which indicates a very significant relationship between education with the presence of the elderly to the elderly Posyandu.

Table 1.3
The Relationship between Home Distance and Elderly Attendance to Elderly Posyandu in the Working Area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2020

No	Distance from house to elderly Posyandu	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	Affordable	17	65,4	9	34,6	26	100	0.012
2	Unreachable	4	22,2	14	77,8	18	100	
	Total	21		23		44	100	

Source: Primary Data (processed in 2020)

The table above shows the percentage of elderly who attend the elderly Posyandu 65.4%, the distance to an affordable house is higher than the distance to an unreachable house, only 22.2%, on the other hand, the elderly who do not attend the elderly Posyandu are 77.8%, the distance to their home unreachable is higher than the distance to affordable houses of 34.6%. The difference in this proportion in statistical tests reached a significant level (P value 0.012), which showed a very significant relationship between the distance from home to the elderly Posyandu and the presence of the elderly to the elderly Posyandu.

Table 1.4
The Relationship between the Role of Health Officers and the Attendance of the Elderly to the Elderly Posyandu in the Working Area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2020

No	The Role of Health Officers	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	role	18	62,1	11	37,9	29	100	0.020
2	No role	3	20.0	12	80.0	15	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attended the elderly Posyandu 62.1% with health workers who played a higher role compared to health workers who did not play a role of only 20.0%, on the other hand the elderly who did not attend the elderly Posyandu 80.0% with officers Health workers who did not play a role were higher than health workers who played a role by 37.9%. The difference in these proportions reached a significant level in statistical tests (P value 0.020), which indicated that there was a very significant relationship between the role of health workers and the attendance of the elderly at the elderly Posyandu.

Table 1.5
The Relationship between Family Support and the Attendance of the Elderly to the Elderly Posyandu in the Working Area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2020

No	Family support	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	Support	14	82.4	3	17,6	17	100	0.001
2	Does not support	7	25,9	20	74,1	27	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attended the elderly posyandu 82.4% received higher family support compared to those who did not get family support only at 25.9%, on the other hand the elderly who did not attend the elderly posyandu 74.1% did not receive family support higher than those who get family support of 17.6%. The difference in this proportion in statistical tests reaches a significant level (P value 0.001), which indicates a very significant relationship between family support and attendance of the elderly at the elderly Posyandu.

Table 1.6
The Relationship between the Role of Cadres and the Coverage of Elderly Attendance to the Elderly Posyandu in the Working Area of the UPTD Meuraxa Health Center in Banda Aceh City in 2020

No	Role of Cadre	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	role	17	60,7	11	39,3	28	100	0.049
2	No role	4	25.0	12	75.0	16	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attended the elderly Posyandu 60.7% with cadres who played a higher role compared to cadres who did not play a role of only 25.0%, on the other hand the elderly who did not attend the elderly Posyandu 75.0% with cadres who did not play a role higher than the cadres who played a role of 39.3%. The difference in these proportions statistically reached a significant level (P value 0.049), which indicated that there was a very significant relationship between the role of cadres and the attendance of the elderly at the elderly Posyandu.

Table 1.7
The Relationship between Motivation and Elderly Attendance at the Elderly Posyandu in the Work Area of the UPTD Puskesmas Meuraxa, Banda Aceh City in 2020

No	Motivation	Elderly Presence				Total	%	P Value
		Present	%	Not present	%			
1	Well	11	73,3	4	26,7	15	100	0.033
2	Not enough	10	34.5	19	65.5	29	100	
	Total	21		23		44	100	

Source:Primary Data (processed in 2020)

The table above shows the percentage of elderly who attend the elderly Posyandu 73.3% with good motivation higher than only 34.5% less motivation, on the other hand the elderly who do not attend the elderly Posyandu 65.5% with less motivation high compared to good motivation of 26.7%. The difference in these proportions statistically reached a significant level (P value 0.033), which indicated that there was a very significant relationship between motivation and attendance of the elderly at the elderly Posyandu.

The Relationship between Knowledge and Elderly Attendance at the Elderly Posyandu

Based on the results of the above study, the proportion of elderly who were present in the good knowledge category was 80.0% and the knowledge category was lacking by 5.3%, while the elderly who were absent were higher in the less knowledge category by 94.7% and the good knowledge category by 20.0%. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.001 indicating a very significant relationship between knowledge and the presence of the elderly.

This research is in line with Chahya Tri Prihantoro (2016) regarding the relationship between the knowledge of the elderly and the activity of the elderly at the elderly Posyandu in Klaseman Village, Gatak District, Sukoharjo Regency which stated that the statistical test results using chi-square obtained a value of 0.006 <0.05, which means there is a relationship between knowledge and attendance elderly to the elderly posyandu.

Likewise, this research is in line with Kusumaningrum's research (2014), that there is a relationship between the level of knowledge and the active attendance of the elderly at the elderly Posyandu in Mayungan Village, Ngawen District, Klaten Regency (p=0.001). The elderly with a good level of knowledge will make visits to the elderly more regularly. Posyandu for the elderly and can know about

their health, rather than the elderly with a poor level of knowledge. By attending Posyandu activities, the elderly will get counseling on how to live healthily with all the limitations or health problems attached to them. With this experience, the knowledge of the elderly increases, which forms the basis for forming attitudes and can encourage their interest or motivation to always participate in elderly Posyandu activities (Sulistyorini, 2010).

Based on the research results obtained by researchers, some of the elderly who did not attend the elderly Posyandu were caused by the lack of knowledge of the elderly in knowing the importance of carrying out routine health checks at the elderly Posyandu, not knowing the dangers and risks that would occur if they did not carry out routine health checks, most of the elderly Those who have good knowledge attend the elderly Posyandu more regularly because the elderly often get information, especially related to the importance of their health checks, so they are motivated to attend health checks.

The Relationship between Education and Elderly Attendance at the Elderly Posyandu

Based on the results of the above study, the proportion of elderly who attended the higher education category was 66.7% compared to the secondary education category which was 59.3% and the basic education category was 9.1%, while the elderly who were not present were more in the basic education category which was 90. 9%, the secondary education category was 40.7% and the higher education category was 33.3%. After statistical tests with the chi-square test, the results obtained were a p-value of 0.007 indicating a very significant relationship between education and the presence of the elderly.

This is in line with research conducted by Nana Adriana (2016), namely the relationship between educational factors and the low visit of the elderly obtained p value = 0.014 (P <0.05) so it can be concluded that there is a significant relationship between education and the low visit of the elderly to the elderly Posyandu in Rambah Village, North Central, the working area of the Rambah Health Center.

The results of this study are also following research conducted by Mulyadi (2009), which states that there is a relationship between the level of education and visits of the elderly to the elderly Posyandu. Purwanto (2005), suggests that one of the factors that influence health behavior is the level of education.

The results of education also shape thinking patterns, perception patterns, and one's decision-making attitude. Increasing one's education teaches individuals to make the best decisions for themselves. However, a low level of education will not always prevent a person from learning from other media, such as television, newspapers, magazines, radio, and other people's experiences which are used as references for him. According to Noorkasiani and Tamher (2012), a person's level of education influences the response to something that comes from outside. Someone who has higher education will be oriented towards preventive action, know more about health problems and have better health status.
Based on the research results obtained by researchers, some elderly people with secondary and basic education are rarely active and attend activities at the elderly Posyandu due to the low understanding obtained by the elderly about the importance of health for the elderly, this is due to poor education so that the elderly are difficult and slow to understand the importance of health and regular check-ups for the elderly.

On the other hand, elderly people with higher education are more active in coming to the elderly Posyandu due to the insights they gain about the importance of health for the elderly due to support from a fairly good education, as well as the understanding given by health workers about the importance of elderly health which increases the awareness of the elderly to be actively present in activities at the elderly Posyandu.

The Relationship between Home Distance and Elderly Presence to the Elderly Posyandu

Based on the results of the above study, the proportion of elderly who attended the category of distance from home to an affordable elderly Posyandu was 65.4% and the category of distance from home to an unreachable elderly Posyandu was 22.2%, while the elderly who were not present were higher in the category of distance from home to an elderly Posyandu who unreachable by 77.8% and the category of distance from home to the affordable elderly posyandu by 34.6%. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.012 indicating a very significant relationship between the distance from the house to the elderly Posyandu and the presence of the elderly.

The results of this study are also in accordance with research conducted by Arlan and Sunarti (2017), entitled "frequency factor of elderly visits to the elderly Posyandu in East Pontianak District". According to Sulistyorini (2010) that close access to posyandu will make it easy for the elderly to reach posyandu without having to experience physical fatigue due to decreased endurance or physical strength.

The distance can limit the ability and willingness to seek health services, especially if the available facilities and transportation are limited, communication is difficult and there are no service places available in the area. According to (Agustina et al, 2015) distance is a barrier that increases the tendency to delay a person's or community's efforts to seek health services.

Based on the research results obtained by researchers, the elderly who were not present at the elderly Posyandu activities were due to the distance between the house and the elderly Posyandu which was unreachable, and the absence of family members accompanying the elderly to the elderly Posyandu because some of the elderly lived quite far from health service areas and there were also the elderly who are sick so they cannot afford to go to the elderly posyandu on their own. Meanwhile, some elderly people who are within reach are more active in attending the elderly posyandu because their homes are close to the elderly posyandu activities and can go alone, go with neighbors so that the elderly can take advantage of the facilities available at elderly posyandu.

The relationship between the role of health workers and the presence of the elderly at the elderly Posyandu

Based on the results of the above study, the proportion of elderly who were present in the role category of health workers who played a role was 62.1% and in the category of the role of health workers who did not play a role was 20.0%, while the elderly who were not present were higher in the category of the role of health workers who did not play a role by 80. 0% and the category of the role of health workers played a role of 37.9%. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.020 indicating a very significant relationship between the role of health workers and the presence of the elderly.

This research is in line with research Nana Aldriyana (2016) that The relationship between distance and transportation factors with the low visit of the elderly obtained p value = 0.0001 (P <0.05) so it can be concluded that there is a significant relationship between distance and transportation with the low visit of the elderly to the elderly Posyandu in Rambah village.

The support received by the elderly by health workers is in the form of coaching for the elderly which includes physical, psychological, and social aspects to improve their health of the elderly. This is consistent with the results of research by Camacho, et al (2009) on differences in socio-economic status and institutional characteristics in preventive public services for the elderly in Costa Rica which states that health policies affect the improvement of the health status of the elderly through professional primary health care efforts. Health also plays an important role in examining the health condition of the elderly and providing related counseling about the importance of carrying out routine health checks for the elderly as well as nutrition for the elderly so that the elderly can actively attend the elderly Posyandu.

Based on the research results obtained by researchers, the role of health workers in posyandu activities is as a facilitator and empowering the community in posyandu activities for the elderly. However, the elderly are dissatisfied with the role of health workers who make the elderly uncomfortable because visits to check the health of the elderly is not carried out routinely. Some of the elderly say the role of health workers plays a role because health workers can maintain the privacy of the elderly when carrying out examinations and health workers are friendly in providing information related to the health of the elderly.

Relationship between family support and elderly attendance at the elderly Posyandu

Based on the results of the above study, the proportion of elderly who were present in the category of family support that supported was 82.4% and in the category of family support that did not support was 25.9%, while the elderly who were not present were higher in the category of non-supportive family support of 74.1% and the category of family support. which supports 17.6%. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.001 indicating a very significant relationship between family support and the presence of the elderly.

This research is in line with the research of Sumiati et al (2012) that the family has an important role in the life of the elderly, especially related to the utilization of the elderly Posyandu. Based on

interviews and observations, it was found that family support was provided to informants in utilizing the elderly Posyandu including picking up and dropping off informants who came to the Posyandu and reminding them of a schedule of posyandu activities. In line with Stanley (2005), in his book, it is explained that all forms of attention given by the family in particular and the community, including health workers in general, foster the motivation of the elderly to continue to work and exist in their lives.

According to Rahayu (2010) in Wahyuni et al (2012) that family support has a big influence on the lives of the elderly, because they feel they are getting family support, emotionally because they feel cared for, get suggestions or pleasant impressions of themselves and the behavior of activity or activity that can be observed or not.

Family support plays a very important role in encouraging the interest or willingness of the elderly to participate in elderly Posyandu activities. The family can be a strong motivator for the elderly if they always take the time to accompany or accompany the elderly to the Posyandu, remind the elderly if they forget the Posyandu schedule, and try to help overcome all problems with the elderly (Aryantiningsih, 2014).

Based on the research results obtained by researchers, family support plays an important role in encouraging the interest of the elderly to participate in activities at the Elderly Posyandu. The family can be a strong motivator for the elderly to accompany or accompany the elderly to the elderly Posyandu and remind them of the schedule of the Elderly Posyandu. distant activities. Many elderly family members work in the morning and Posyandu activities in the morning make the elderly increasingly inactive to attend elderly Posyandu activities because the distance from their homes is quite far and there is no family to accompany them, there is busyness in family members and lack of attention given by the family for the elderly will affect in the form of family support.

The Relationship between the Cadre's Role and the Attendance of the Elderly to the Elderly Posyandu

Based on the results of the above study, the proportion of elderly who were present in the role category of cadres who played a role was 60.7% and in the role category of cadres who did not play a role was 25.0%, while the elderly who were not present were higher in the role category of cadres who did not play a role by 75.0% and the role category of cadres who played a role of 39.3%. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.049 indicating a very significant relationship between the role of cadres and the presence of the elderly.

This research is in line with researcher Nana Aldriana (2016) that there is a relationship between the role of cadres and the low visit of the elderly, p-value = 0.0001 (P <0.05), so it can be concluded that there is a significant relationship between the role of cadres and the low visit of the elderly to the elderly Posyandu in Rambah Tengah village, north of the working area of the Rambah Health Center.

The results of Dodo's research (2008) found that there was a significant relationship between knowledge and the level of activity of posyandu cadres in the Sikumana Health Center work area. The high level of cadre knowledge resulted in good cadre performance and had an impact on the implementation of the posyandu program. The better or the higher the cadre's knowledge, the higher or the better the level of activity in the process of implementing posyandu activities.

This is in accordance with the results of Maria's research (2008) which states that cadre support affects the activeness of elderly visits to posyandu. This is because the officers are limited so it is feared that they will not be able to provide good service for the elderly, another reason is that the elderly are not strong enough to stand in long queues, and are easily offended, dizzy and tired. (Meiner, 2006) states that this condition is related to changes in the elderly from various aspects, namely physical, psychological, and social. If this condition is not considered and left for a long time it will cause emotional instability, namely the elderly are easily offended.

Health cadres are adults, both men, and women who are seen as people who have advantages in their community, which can be in the form of success in activities, flexibility in human relations, socio-economic status, and so on (Ministry of Health, 2010). The ability of cadres both in terms of education and knowledge of cadres must be well actualized as in motivating the elderly to want to come to the posyandu on the next schedule, cadres must be able to provide explanations to questions from the elderly regarding health.

Based on the research results obtained by researchers, The elderly who are dissatisfied with the role of cadres make the elderly uncomfortable and the respondents' lack of judgment is due to the fact

that the activities carried out at the posyandu have not changed much so that the elderly do not routinely attend and carry out health checks at the elderly posyandu. Some elderly say the role of cadres is because the role of cadres reminds the elderly to attend the elderly posyandu and carry out health checks.

The Relationship between Motivation and Elderly Attendance at the Elderly Posyandu

Based on the results of the above study, the proportion of elderly present in the good motivation category was 73.3% and in the less motivated category was 34.5%, while the elderly who were not present were higher in the less motivated category by 65.5% and in the good motivation category by 26.7 %. After statistical tests were carried out with the chi-square test, the results obtained were a p-value of 0.033 indicating a very significant relationship between motivation and the presence of the elderly.

This research is in line with the researcher Dian Mahara (2012) that there is a relationship between motivation and low activity of the elderly, obtained p value = 0.009 <0.05, so it can be concluded that there is a significant relationship between the role of cadres and the activity of the elderly in participating in elderly posyandu activities in Kauman Village, District Polanharjo, Klaten Regency.

Widjajono (2009) stated that the lack of motivation in the respondents made the respondents not actively participate in Posyandu activities. The motivation of the elderly registered at the Posyandu can be influenced by extrinsic motivation as well as community leaders and the services of Posyandu staff related to the motivation of the elderly community to participate in the activities of the elderly Posyandu. Community leaders have usually seen as informal leaders as well as role models and role models in the community. Motivation from health center staff, Posyandu cadres, and local community leaders influence the activeness of the elderly in participating in elderly Posyandu activities.

This is in accordance with the RI Ministry of Health (2009) which states that the target of the elderly Posyandu is aimed directly at the elderly. The benefits felt by the elderly are viewed from the physical aspect, namely that their health condition is always maintained or healthy. spiritual activities and the existence of recreation to eliminate boredom. The feeling of being happy to meet fellow elderly is a benefit that the elderly get socially from having an elderly posyandu. The experience of the elderly related to the benefits of the elderly posyandu affects the motivation of the elderly to join the elderly posyandu, according to the results of the study Fuad (2008) regarding the phenomenological study of the motivation of the elderly in utilizing the elderly Posyandu, namely that by knowing the benefits of the Posyandu, the elderly are motivated to join the elderly Posyandu.

Based on the results of the research obtained by researchers, there was a lack of motivation in participating in Posyandu activities for the elderly, one of which was that the activities held did not change much or other activities other than checking blood pressure, weighing, measuring height, and nutritional consultations. The elderly think that their complaints of weight and height do not change much from time to time and their activities are just monotonous, thus reducing the motivation to continue participating in the activities of the elderly Posyandu.

CONCLUSION

Based on the results of research on January 28 2020-February 17 2020 on 44 respondents in the UPTD Work Area of the Meuraxa Health Center in Banda Aceh City, then the researcher can draw the following conclusions:

The results of the bivariate analysis stated that all sub-variables, namely knowledge, education, distance from home, the role of health workers, family support, the role of cadres, and motivation, had a significant relationship between motivation and presence of the elderly at the Posyandu for the elderly in the working area of the Meuraxa Health Center, Banda Aceh City because the test results statistics with chi-square using SPSS get a p-value <0.05, which means that Ha is accepted and H0 is rejected.

SUGGESTION

Based on the results of these studies, some suggestions can be given as follows: It is hoped that the Head of the Meuraxa Health Center through health workers will be able to provide complete information to the elderly and elderly families regarding the elderly Posyandu, provide health education, and activate the elderly group with various health activities and various other activities in the UPTD Work Area of the Meuraxa Health Center which is carried out routinely every month, thereby increasing the knowledge and motivation of the elderly so that they can be actively present in the elderly Posyandu activities on a

regular basis, Posyandu cadres are advised to conduct counseling more often for every family who has elderly people so that they can increase family support for the elderly so that they can be actively present in elderly Posyandu activities and It is hoped that for future researchers it will serve as a guideline for further research and can be developed by adding new variables for further research.

Referance

1. Agustia, H. *"Motivasi Lanjut Usia Dalam Melakukan Senam Lansia Di UPT Pelayanan Sosial Lanjut Usia dan Anak Balita Wilayah Binjai dan Medan Tahun 2013".* 2013.
2. Agustina, A., et al. *"Motivasi Ibu Dalam Melakukan Kunjungan Imunisasi Pada Bayi Di Desa Kepatihan Kecamatan Jombang Kabupaten Jombang*." *Jurnal Ilmiah Kebidanan (Scientific Journal Of Midwifery) 1(1): 1-7.* 2015.
3. Aldriana, N., & Daulay, R. *Faktor-Faktor yang Berhubungan Dengan Rendahnya Kunjungan Lansia Ke Posyandu Lansia Di Desa Rambah Tengah Utara Wilayah Kerja Puskesmas Rambah Tahun 2015. Jurnal Martenity and Neonatal*, *2*(2), 91-101. 2016.
4. Arpan, Iskandar, and Sunarti. "Faktor Frekuensi Kunjungan Lansia Ke Posyandu Lansia Di Kecamatan Pontianak Timur." *Jurnal Vokasi Kesehatan* 3.2. 2017.
5. Aryantiningsih, D. S. *"Faktor-Faktor yang Berhubungan dengan Pemanfaatan Posyandu Lansia di Kota Pekanbaru."* An-Nadaa: Jurnal Kesehatan Masyarakat 1(2): 42-47. 2014.
6. Astuti, Tri Fidiar. *Hubungan Dukungan Keluarga Dengan Keaktifan Lansia Mengikuti PosyanduLansia Di Posyandu Melati Klawisan Seyegan Yogyakarta*. Diss. STIKES JenderalAchmadYani Yogyakarta. 2017.
7. Camacho, G.B and Bixby, L.R,. *Differentials by Socioeconomic Status and Institutional Characteristics in Preventive Service Utilization by Older Persons, Journal Aging Health* 21 ; 730. 2009.
8. Chintyawati, C. *"Hubungan antara nyeri Reumatoid Artritis dengan kemandirian dalam aktivitas kehidupan sehari-hari pada lansia di Posbindu Karang Mekar wilayah kerja Puskesmas Pisangan Tangerang Selatan". 2014.*
9. Depkes RI. *Profil Kesehatan Indonesia*. Jakarta. 2009.
10. Depkes RI. *Riset Kesehatan Dasar*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementrian Kesehatan RI. 2013.
11. Dinata, W. W. "*Menurunkan Tekanan Darah Pada Lansia melalui Senam Yoga."* JORPRES (Jurnal Olahraga Prestasi) 11(2). 2015.
12. Dinas Kesehatan Aceh. *Profil Kesehatan Aceh Tahun 2016*. Dinas Kesehatan: Aceh. 2017.
13. Dinas Kesehatan Aceh. *Profil Kesehatan Aceh Tahun 2017*. Dinas Kesehatan: Aceh. 2018.
14. Dodo, D. 2009. *Faktor- Faktor yang Berhubungan dengan Keaktifan Kader Dalam Pelaksanaan Kegiatan Posyandu di Kelurahan. Jurnal Pangan, Gizi dan Kesehatan.*Tahun 1, Vol 1, No 1. 2009.
15. Fuad, H., *Study Fenomenologi Motivasi Lansia Dalam Memanfaatkan Posyandu Lansia Di Kelurahan Sidomulyo Kec. Motesih Kab. Karang Anyar, Program Study Ilmu Keperawatan Fakultas Kedokteran Universitas Diponegoro*. 2008.
16. Kementerian Kesehatan Indonesia. *ProfilKesehatan Indonesia Tahun 2009*. Jakarta: Kementerian Kesehatan RI. 2010.
17. Kementerian kesehatan RI. *INFODATIN Pusat Data dan InformasiKemeterianKesehatan RI SituasiKesehatanLansia*. 2016.
18. Kemenkes RI. *ProfilKesehatan Indonesia tahun 2016*. Jakarta :Kemenkes RI; 2017.
19. Kemenkes RI. *GambaranKesehatanLanjutUsia di Indonesia*. Jakarta: BuletinJendela Data dan InformasiKesehatan. 2018.
20. Kusumaningrum, Farida. *Faktor internal yang berhubungan dengan keaktifan lansia berkunjung keposyandu lansia desa Mayungan Kecamatan Ngawen Kabupaten Klaten*. Diss. Universitas Muhammadiyah Surakarta, 2014.
21. Maria M. N. P., *Aplikasi Teori Snehandu b. Karr (perilaku) Terhadap Keaktipan Kunjungan Lansia ke Posyandu Lansia Study Di Lima Posyandu Puskesmas Jagir, Surabaya.* 2008.
22. Meiner, M., *Gerontologic Nursing. 3rd ed. Mosby Inc. St. Louis*. 2006.

23. Mulyadi, Y. *Pemanfaatan Posyandu Lansia di Kota Pariaman, (online), Vol.3,No.5, (http://download.portalgaruda.org/article.Pemanfaatan Posyandu Lansia di Kota Pariaman, diakses tanggal 17 februari 2020)*. 2009.
24. Notoatmodjo, S. *Kesehatan Masyarakat Ilmu dan Seni.*Jakarta :RinekaCipta. 2007.
25. Notoatmodjo, S. *Metodologi Penelitian Kesehatan*. Jakarta :Rineka Cipta. 2010.
26. Purwanto. *Tujuan Pendidikan dan Hasil Belajar.* Jakarta:Jurnal. Teknodik Depdiknas. 2005
27. Stanley. M. Blair. K.A, and Beare. B.G. *Gerontological Nursing : Promoting Successful Aging With Older Adults.* Dafis Company. Philadelphia. 2005.
28. Sulistyorini, C. I et al. *Posyandu (Pos Pelayanan Terpadu) dan desa siaga*. Yogyakarta: Nuha Medika. 2010.
29. Sumiati, Suriah, and Iwan M. Ramdan. "*PemanfaatanPosyanduLansia Di Wilayah Kerja Puskesmas Wonorejo SamarindaTahun 2012." Jurnal Fakultas Kesehatan Masyarakat, Universitas Hasanuddin.* 2012.
30. Sunaryo, Wijayanti, Rahayu. *Asuhan Keperawatan Gerontik*. Yogyakarta : CV ANDI OFFSET. 2016.
31. Suseno, Dian Mahara. *Faktor-Faktor Yang Mempengaruhi Keaktifan Lansia Dalam Mengikuti Kegiatan Posyandu Lansia Di Desa Kauman Kecamatan Polanharjo Kabupaten Klaten*. Diss. Universitas Muhammadiyah Surakrta, 2012.
32. Tamher, S. &Noorkasiani. *Kesehatan Usia Lanjut dengan Pendekatan Asuhan Keperawatan*, Jakarta: Penerbit Salemba Medika. 2012.
33. Tri Prihantoro, Chahya, BejoRaharjo, and Anisa Catur Wijayanti. *Hubungan Antara Pengetahuan Dengan Keaktifan Di Posyandu Lansia Desa Klaseman Kecamatan Gatak Kabupaten Sukoharjo Tahun 2016*. Diss. Universitas Muhammadiyah Surakarta. 2016.
34. Veronica, P. and D. Y. S. Rahayu. *Identifikasi Successful Aging Pada Lansia Yang Tinggal Di Pesisir Pantai Kecamatan Abeli Kota Kendari Tahun 2017, Poltekkes Kemenkes Kendari.* 2017.
35. Wahyuni, dkk. "*Persepsi Masyarakat Terhadap Pelayanan Kesehatan Lansia di Posyandu Rindu Kasih Sayang Nadila.*" Jurnal Kultur Demokrasi 5.11. 2018.
36. Wahyuni, Handayani, Dwi. *"Hubungan Dukungan Keluargadengan kepatuhan lansia dalam mengikuti Posyandu lansia di Posyandu lansia Jetis Desa Krajan Kecamatan Weru Kabupaten Sukoharjo." Gaster* 9.1: 49-58. 2012.
37. Waruwu, Berkat Warisman. "*Hubungan Perilaku Kader Dengan Cakupan Pelaksanaan Kegiatan Posyandu Lansia Di Wilayah Kerja Puskesmas Pariwisata Pantai Cermin Kecamatan Pantai Cermin Kabupaten Serdang BedagaiTahun 2017*." 2018.
38. Widjajono, U. "Berbagai Faktor Yang Berpengaruh Terhadap Partisipasi Lansia Dalam Kegiatan Posyandu Plus Di Dusun Soragan, Desa Ngestiharjo Kecamatan Kasihan Kabupaten Bantul." *Poltekkes Depkes Yogyakarta* (2009). 2009.
39. WHO. World Health Statistics 2017: World Health Organization; 2017.
40. Wikananda, G. *Hubungan kualitas hidup dan faktor resiko pada usia lanjut di wilayah kerja puskesmas tampak siringi kabupaten gianyar bali 2015,* Bali: Fakultas Kedokteran Universitas Udayana. 2015.

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THE RELATIONSHIP OF KNOWLEDGE AND FAMILY HEAD'S BEHAVIOR IN ERADICATION OF MOSQUITO NESTS (PSN) IN DENGUE HEMORRHAGIC FEVER ENDEMIC AREAS MUARA DUA HEALTH CENTER, LHOKSEUMAWE CITY

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) or Dengue Hemorrhagic Fever (DHF) is currently a public health problem in Indonesia, prevention efforts that can be done are to break the chain of transmission of DHF, one of which is through the Eradication of Mosquito Nests (PSN). DHF by all levels of society This study aims to determine the relationship between knowledge and behavior of the head of the family in Eradicating Mosquito Nests (PSN) in 3 DHF Endemic Areas at the Muara Dua Health Center, Lhokseumawe City.The type of research used is analytic with a cross-sectional design. The population and sample of this study are all heads of families who live in3 Dengue Endemic Areas Muara Dua Public Health Center, Lhokseumawe City with a total sample of 98 house holds with simple random sampling technique.The results of the research on the characteristics of respondents based on the age of the majority were 36-45 years 53 respondents, the sex of the majority was male 96 respondents, the education of the majority was high school 51 respondents, the majority of jobs were non ASN 81 respondents. The highest KK knowledge in the sufficient category is 47 respondents, the highest KK behavior is in the good category, 69 respondents. Statistical test results show there is a relationship between knowledge and the behavior of the head of the family in 3 DHF Endemic Areas at the Muara Dua Community Health Center, Lhokseumawe City where a ρ value of 0.000 (below the alpha (α) value of 0.05) is obtained so that Ha is accepted. Based on the results of this study, it is suggested to the health center to be able to improve health education to the community, especially heads of families about PSN.

Keywords: Knowledge,Behavior, Family Head,Eradication of Mosquito Nests

Introduction

Dengue Hemorrhagic Fever (DHF) is currently a public health problem in Indonesia, where the number of sufferers tends to increase and its spread is increasingly widespread. Dengue fever is caused by the Dengue virus and is transmitted through the bites of Aedes aegypti and Aedes albopictus mosquitoes. The incidence of DHF is increasing every year with different clinical manifestations ranging from mild to severe (Widoyono, 2013).

The increase in the incidence and spread of DHF is thought to be closely related to the very high vector density and is supported by increased population mobility due to increased transportation facilities within the city and outside the city. All areas of Indonesia are at risk of contracting dengue fever except for areas with an altitude of more than 1000 meters above sea level (Ministry of Health RI, 2015).

The cause of DHF is the Dengue virus (DEN-1, DEN-2, DEN-3, DEN4) which is carried by mosquito vectors of the genus Aedes (especially A.Aegpty and A.Albopticus). These mosquitoes breed in clean water, for example in bathtubs, plant pots and used cans. In suppressing the incidence of DHF, prevention is the most appropriate way, namely through the Eradication of Mosquito Nests (PSN) through the 3M Plus movement. The 3M plus movement includes draining, closing and burying plus preventing mosquito bites, for example by using mosquito repellent lotions, using larvicides and keeping fish that eat mosquito larvae. It is hoped that through this 3M Plus movement, the Larvae-Free Number (ABJ) will increase every year (Jumadi, 2015).

Before 1970 only 9 countries experienced dengue outbreaks, but now dengue is an endemic disease in more than 100 countries, including Africa, America, the East Mediterranean, Southeast Asia and the West Pacific. America, Southeast Asia and the West Pacific have the highest number of dengue cases. The number of cases in America, Southeast Asia and the Western Pacific has exceeded 1.4 million cases in 2014 and more than 2.3 million cases in 2016. In 2018 it is estimated that there will be 2.35 million cases in America. Where 37,687 cases were severe DHF (WHO, 2016).

DHF cases in Indonesia have become a health problem in recent years. Dengue Hemorrhagic Fever was first discovered in DKI Jakarta and Surabaya in 1968 with a total of 58 cases. Until 2017 there was an increase in the number of provinces and cities that were endemic to DHF, from two provinces and two cities to 32 provinces and 382 cities with a total of 159,945 cases. Indonesia in 2016 recorded an Incidence Rate (AI) of 45.65 per 100,000 population or 112,511 cases, and in 2017 in January-April there was an AI of 5.17 per 100,000 population or 13,451 cases. Until 2017, Indonesia was still in the top ranking for the number of DHF cases in ASEAN, namely more than 150,000 cases (Ministry of Health RI, 2018).

Aceh Province Based on Health Profile data (2017), until now, DHF is a vector-borne disease that is a priority in infectious disease control programs, both in Indonesia and in the world. In the last 12 months, clinical DHF can be detected in almost all districts/cities in Aceh Province with a prevalence range of 0.0-4.5%. In DHF cases, Aceh Province contributed 2,416 cases in 2015 (IR 55.72) with 37 people dying (CFR 1.39), then in 2016 cases decreased to 1,521 cases (IR 32.16) which 21 people died. (CFR 1.24) but increased again in 2017 to 2,713 cases (IR 61.12), the number of patients who died was 17 cases (CFR 0.87) (Aceh Provincial Health Office Profile 2017).

In Lhokseumawe City in 2015 there were 23 cases then increased sharply in 2016 by 41 cases with an Incident Rate of 21.29/100,000 population and in 2017 it increased to 97 cases with an Incidence Rate of 64.9/100,000 population (Health Profile, 2017). Research conducted by Helper, et al (2016) regardingCommunity Knowledge and Behavior in Dengue Hemorrhagic Fever Prevention in West Java and West Kalimantan Provincesto 600 respondents in the four cities/regencies that have the highest endemicity, the results showed 92.8% of respondents had never heard of Dengue Hemorrhagic Fever, 77% of respondents had knowledge of Dengue Hemorrhagic Fever as an infectious disease, 81.5% of respondents had knowledge of how to transmission of Dengue Hemorrhagic Fever by mosquito bites and 63.7% of respondents took preventive measures through eradicating mosquito nests.

Iroma, et al (2016) who conducted an analysis of the relationship between the characteristics of the head of the family and the behavior of preventing dengue fever in Pakijangan Brebes stated that there was a relationship between the characteristics of the head of the family and the behavior of preventing DHF. Including the exposure of the head of the family to communication media, the type of work the head of the family does, and socioeconomic status.

The lack of correct information about the prevention of dengue disease to families and communities and accompanied by increasingly individualistic social life in society, makes it increasingly difficult for existing communities to work together to eradicate the mosquito. For this reason, families, especially heads of families, need to find information related to PSN to increase their knowledge so that it will influence family behavior in PSN.

Knowledge of family heads about PSN can also be obtained from health education provided by health workers so that families and communities can carry out eradication of mosquito nests in the 3M-Plus way against breeding grounds for DHF transmitting mosquitoes and physical, chemical and biological control efforts at home , public places, schools, offices and their environment.

Muara Dua District, Lhokseumawe City, which oversees 17 villages, with a population of 52,504 as of December 2018 and is one of the areas that has the potential to be infected with DHF, due to the many sources of breeding Aedes agepty mosquitoes around residents' homes such as used tires and cans and the like. and the high level of population mobility, the environment around the house which is close to the garden, the community is still seen littering, the participation of the community in the implementation of 3M Plus is not running well, there is still a lack of counseling about DHF. So that it can be illustrated that the behavior of the community, especially heads of families, pays little attention to environmental hygiene and has not carried out prevention and eradication of mosquito breeding sites (PSN-DBD) by controlling the Aedes aegypti vector mosquito.

Based on the data the researchers obtained in the Working Area of the Muara Dua Health Center, Lhokseumawe City, from January to December 2018, there were 3 (three) villages which were DHF

endemic areas, namely Panggoi Village, which was inhabited by 1,720 households, Meunasah Mesjid Village, which was inhabited by 2,083 households. and Paya Punteut Village, which is home to 847 households with 20 cases of DHF and 2 cases of death from January to December 2018.

The results of initial interviews with 10 family heads regarding their knowledge and behavior about DHF, 5 said that basically they already knew about dengue fever (DHF), and had listened to health education about DHF delivered by health workers, while 5 family heads said that they do not know how to effectively manage DHF through DHF mosquito nest eradication (PSN) activities because there is still a lack of information they get, both from health workers and other sources of information.

Based on the description of the background above and the phenomena that researchers found in the working area of the Muara Dua Health Center, Lhokseumawe City, the researchers are interested in conducting a study on DHF cases with the title "Relationship of Knowledge with the Behavior of Heads of Families in Eradicating Mosquito Nests (PSN) in DHF Endemic Areas at Puskesmas Muara Dua Lhokseumawe City in 2019".

Research Purposes

This study aims to determineRelationship between knowledge and behavior of the head of the family in eradicating mosquito nests (PSN) in DHF endemic areas at the Muara Dua Health Center, Lhokseumawe City.The specific objectives in this study are:

1. Knowing the knowledge of the head of the family about Eradicating Mosquito Nests (PSN) in Dengue Endemic Areas at the Muara Dua Health Center, Lhokseumawe City
2. Knowing the behavior of the head of the family in Eradicating Mosquito Nests (PSN) in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City.
3. Knowing the relationship between knowledge and the behavior of the head of the family in Eradicating Mosquito Nests (PSN) in Dengue Endemic Areas at the Muara Dua Community Health Center, Lhokseumawe City.

Research Methodology

This type of research is analytic, namely to determine the relationship between the knowledge and behavior of the head of the family and the implementation of the Eradication of Mosquito Nests (PSN) in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City. This study uses a cross-sectional study approach, where the independent variables and dependent variables are studied at the same time.

The population to be studied is allhead of familyinPanggoi Village as many as 4,650 Heads of Families (KK).Determination of the sample usingsimple random sampling technique, which totaled 98 heads of families (KK) as samples in this study.

Results And Discussion

Table 1.1
Frequency of Knowledge of the Head of the Family About Eradication of Mosquito Nests in the Territory Endemic to DHF at Muara Dua Health Center Lhokseumawe City

No	Knowledge of the Head of the Family	F	%
1	Well	33	33,7
2	Enough	47	48
3	Not enough	18	18,4
Amount		**98**	**100**

Based on the table above, it is known that the highest knowledge of heads of families in the DHF Endemic Area of the Muara Dua Health Center, Lhokseumawe City, regarding PSN is in the sufficient category, namely 47 respondents or 48% and the lowest is in the less category, namely 18 respondents or 18.4%.

Table 1.2
Frequency of Behavior of Head of Family About Eradication of Mosquito Nests in the Territory Endemic to DHF at Muara Dua Health Center Lhokseumawe City

No	Behavior of the Head of the Family	F	%
1	Well	69	70,4
2	Not good	29	29,6
Amount		**98**	**100**

Based on the table above, it is known that the behavior of heads of families in the DBD Endemic Area of the Muara Dua Health Center, Lhokseumawe City, regarding PSN is in the good category, namely 69 respondents or 70.4% and the lowest is in the unfavorable category, namely 29 respondents or 29.6%

Table 1.3
ConnectionKnowledge with the behavior of the head of the family about Eradication of Mosquito Nests in the Territory Dengue Endemic Muara Dua Public Health Center Lhokseumawe City

Knowledge of the Head of the Family	Behavior of the Head of the Family				Q	*P* Value
	Well		Not good			
	f	%	f	%		
Well	31	93.9	2	6,1	33	0.000
Enough	32	68,1	15	31,9	47	
Not enough	6	33,3	12	66,7	18	
Total	69	70,4	29	29,6	98	

Based on the table abovecouldnoted that,of the 33 heads of families with good knowledge, the behavior of the heads of families about PSN tends to be in the good category, namely 31 respondents (93.9%), as well as 47 heads of families with sufficient knowledge, behavior regarding PSN also tends to be in the good category, namely 32 respondents (68.1%) compared to 18 heads of families with less knowledge where the behavior of the heads of families regarding PSN tends to be in the unfavorable category, namely 12 respondents (66.7%).

The statistical test results obtained a ρ value of 0.000, which means it is smaller than the alpha (α) value of 0.05, so it can be concluded that there is a significant relationship between knowledge and behavior of heads of families about PSN in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City so that Ha is accepted and Ho rejected.

ConnectionKnowledge with the behavior of the head of the family aboutEradication of Mosquito Nests in the TerritoryEndemic to DHF at Muara Dua Health Center Lhokseumawe City

The results of cross-tabulation showed that of the 33 heads of families with good knowledge, the behavior of the heads of families about PSN tended to be in the good category, namely 31 respondents (93.9%), as well as 47 heads of families with sufficient knowledge, behavior about PSN also tended to be in the good category. good, namely 32 respondents (68.1%) compared to 18 heads of families with less knowledge where the behavior of the heads of families regarding PSN tends to be in the unfavorable category, namely 12 respondents (66.7%). The statistical test results obtained a ρ value of 0.000, which means it is smaller than the alpha (α) value of 0.05, so it can be concluded that there is a significant relationship between knowledge and behavior of heads of families about PSN in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City so that Ha is accepted and Ho rejected.

Efforts to prevent DHF have been carried out by the Muara Dua District Health Center, Lhokseumawe City, both through the media in the form of leaflets, brochures, banners and direct health education and have been running optimally which can be seen from several factors, such as increasing community participation, especially heads of families in PSN. According to the researcher's assumption, this is because the community is aware that their village is a DHF endemic area which occurs almost every year and the active health center staff and local health cadres empower the community about PSN behavior through health counseling, mutual cooperation and cross-sector collaboration involving all other related parties. such as community leaders, religious leaders, community organizations and NGOs.

Krianto's research (2013) obtained results similar to this study, that knowledge and attitudes influence PSN behavior with p <0.001, and most respondents support PSN behavior on the grounds that they are afraid that one day a family member will be affected by DHF so they will try to eradicate it. mosquito nest. In the study it was stated that 70% of respondents stated that fogging was a quicker and more effective way to prevent dengue.

These results are in accordance with this study, where more than half of the respondents stated this. Ekawati's research (2012) obtained similar results that there is a relationship between knowledge and PSN behavior, the significance value is p = 0.017 with α (0.05). This might happen in accordance with the theory of Lawrence Green (2008), that knowledge and attitudes are related to individual or group motivation in doing something. So the better the knowledge and positive attitude or one's view of something, the better the action taken on it.

Research that was conducted by Robby (2017) concerning the relationship of knowledge, attitudes and behavior of the community with the incidence of dengue fever in Medan Sunggal District, this research was conducted aiming to determine the extent to which the respondents' behavior regarding the efforts made to prevent DHF incidents so as to reduce the number of dengue incidents. Analysis of behavior was carried out by asking questions related to the habit of burying used goods, using mosquito coils, giving abate, draining the bath, and hanging clothes. Based on bivariate analysis with the Kolmogorov-Smirnov Z analysis test, a p-value of 0.013 (p <0.05) was obtained, which means that there is a significant relationship between the level of community behavior and the incidence of DHF in Medan Sunggal District. This is in line with research by Purnama et al. that there is a relationship between behavior and the incidence of DHF in South Denpasar District by obtaining a p-value of 0.000 (Purnama et al., 2013). A study in Denpasar stated that there was a relationship between behavior and the incidence of DHF (Jata et al., 2016). Cleaning the environment and routinely exterminating mosquito nests will effectively reduce mosquito breeding grounds, thereby reducing the incidence of DHF in the environment (Purnama et al., 2013).

Psychology views human behavior as a reaction that can be simple or complex. In humans in particular and in various animal species in general there are indeed forms of instinctive behavior (species-specific behavior) which are based on nature to maintain life. One of the most interesting characteristics of human behavioral reactions is their differential nature. That is, one stimulus can cause more than one different response and several different stimuli can cause the same response.

The environment is one of the factors involved in the transmission of DHF. The breeding of Aedes mosquitoes is known to lay their eggs in standing water on the remains of used cans, water reservoirs, bathtubs, used tires and so on (Satari, 2013). According to Sari (2012), the main way to prevent DHF is by eradicating mosquito nests (PSN). This method is the most effective, efficient and economical in eradicating the DHF transmission vector.

The formation of a new behavior in a person starts when a person knows about a stimulus in the form of material or an object that gives rise to new knowledge in that person. One's knowledge of DHF, how it spreads, and prevention of DHF is very necessary to prevent transmission of DHF. Lack of knowledge can affect the actions to be taken, because knowledge is one of the supporting factors for the occurrence of behavior.

According to A. Wawan (2012), based on the behavioral theory put forward by Skinner, behavior is the result of the relationship between stimulus and response and response. The stages of behavior according to Skinner are known as the ABC theory which consists of triggers that cause a person to behave (Antecedent), reactions or actions to triggers (Behavior), and subsequent events that follow the behavior (Consequences). Human behavior has a very broad scope, including walking, talking, reacting, dressing and so on. Internal activities such as thinking, perception, and emotion are also human behaviors.

The researcher's assumption is that the knowledge of the head of the family about DHF will indirectly influence the behavior of the head of the family, especially in preventing and eradicating mosquito breeding sites that cause DHF (newspapers, magazines and the like) so that the better the knowledge of the head of the family, the better the behavior of the head of the family in eradicating DHF mosquito nests (PSN).

Based on the results of research conducted by researchers in DHF endemic areas in the Working Area of the Muara Dua Community Health Center, Lhokseumawe City, it is known that most of the heads of households about DHF are in the category of sufficient and good, only a small proportion, namely 18.4% of family heads, have less knowledge. This indirectly influences the behavior of the head of the family in eradicating DHF mosquito nests, where based on the results of this study it is known that most of the heads of families (70.4%) have good behavior in PSN DHF. In addition to the knowledge factor of the head of the family, another factor that supports the behavior of the head of the family is the support from the puskesmas or health workers.

In this study it was also known that there were a small number of family heads who still had poor knowledge about DHF so that their behavior regarding PSN became unfavorable. There are several factors that influence the lack of behavior of the head of the family, including the education level of the head of the family, the motivation or desire of the head of the family to gain knowledge about DHF is still low because no member of their family has been infected with DHF so they consider knowledge about DHF to be unimportant as well as perceptions or assumptions. the head of the family thinks that the problem of DHF is the duty of the health worker so that the family does not feel the need to know more about DHF and how to prevent it.

Based on the discussion, theory and related research above and in accordance with the results of this study, namely that there is a relationship between knowledge and the behavior of the head of the family in Eradicating Mosquito Nests (PSN) in Dengue Endemic Areas, Muara Dua Health Center, Lhokseumawe City (Ha accepted), the researcher thinks that the better the knowledge the head of the family, the better his behavior in PSN, and vice versa, the less good the knowledge of the head of family in PSN, the less good his behavior towards PSN.

Conclusion

Based on the results of the research and discussion described in the previous chapter, the following conclusions can be drawn:

1. The knowledge of heads of families in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City, regarding PSN was highest in the sufficient category, namely 47 respondents or 48% and lowest in the less category, namely 18 respondents or 18.4%.
2. The behavior of the head of the family regarding PSN was highest in the good category, namely 69 respondents or 70.4%, and the lowest was in the unfavorable category, namely 29 respondents or 29.6%.
3. The statistical test results obtained a ρ value of 0.000, which means it is smaller than the alpha (α) value of 0.05. It can be concluded that there is a significant relationship between knowledge and behavior of heads of families about PSN in the DHF Endemic Areas of the Muara Dua Health Center, Lhokseumawe City, so that Ha is accepted and Ho is rejected.

Suggestion

Based on the results of these studies, some suggestions can be given as follows:

1. For researchers: the results of this study are expected to add to knowledge, especially about the relationship between knowledge and the behavior of the head of the family in eradicating mosquito nests.
2. To the respondent/head of family: it is hoped that they will continue to increase their knowledge and understanding of PSN in order to prevent the spread of dengue hemorrhagic fever in their neighborhood.
3. To researchers: it is hoped that further in-depth and comprehensive research involving other variables related to the eradication of DHF mosquito nests in the community will be carried out.

References

1. A.Wawan dan Dewi M (2011*). Teori & Pengukuran Pengetahuan, Sikap Dan Perilaku Manusia*. Yogyakarta: Nuha Medika.
2. Arikunto, S. (2010). *Prosedur penelitian Suatu Pendekatan Praktek*. Jakarta : Rineka Cipta.
3. Asih, Y. (2005). *DBD (Diagnosis, Pengobatan, Pencegahan, dan Pengendalian), ed. 2.* Jakarta: EGC.
4. Depkes RI. (2011). *Penyakit Demam Bedarah Dengue (DBD)*. Kemenkes RI : Jakarta.
5. Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan. (2015). *Modul Pengendalian Demam Berdarah Dengue*. Jakarta: Kementerian Kesehatan R. I.
6. Ditjen PP & PL. (2010). *Pemberantasan Sarang Nyamuk Demam Berdarah Dengue dan Pemeriksaan Jentik Berkala*: Kemenkes RI : Jakarta.
7. Dinkes Propinsi Aceh. (2017). P*rofil Kesehatan Aceh.* Dinas Kesehatan Aceh : Puslitbang, sarana, SDM: Banda Aceh.
8. Djunaedi D. (2013). *Demam Berdarah Dengue, Epidemiologi Imunopatologi,Patogenesis, Diagnosis dan Penatalaksanaannya*. Malang: UMM Press.
9. Ekawati K, Purnama G. (2012). *Asosiasi Pengetahuan Tentang Demam Berdarah dan Upaya Pemberantasan Sarang Nyamuk di Kelurahan Sesetan, Denpasar Selatan, Bali.* Diunduh dari: http: //ojs. unud.ac.id/index.php/ach/pdf. Diakses, 20 Juli 2019.
10. Frida (2012). *Mengenal Demam Berdarah Dengue*. Jakarta : CV. Pamulasih.
11. Gunawan, Ary H., (2013). *Sosiologi Pendidikan.* Jakarta: Asdi Mahasalya.
12. Helper Sahat Parulian Manalu, Amrul Munif (2016). *Pengetahuan dan Perilaku Masyarakat dalam Pencegahan Demam Berdarah Dengue di Provinsi Jawa Barat dan Kalimantan Barat*. Loka Litbang P2B2 Ciamis. Diunduh dari: https:// pengetahuan-dan perilaku masyarakat-dala.pdf. Diakses : 26 Maret 2019.
13. Iroma Maulida, Ratih Sakti Prastiwi, Liestiani Harlyn Hapsari (2016. *Analisis Hubungan Karakteristik Kepala KeluargaDengan Perilaku Pencegahan Demam Berdarah Di Pakijangan Brebes.* Infokes, Vol 6 No 1, Juli 2016.
14. Jumadi, et al (2015). *Penatalaksanaan Demam Berdarah Dengue (DBD) Untuk Keluarga; Teori dan Praktik* . Rosda Karya ; Bandung. (2017). P*rofil Kesehatan Indonesia*. Diunduh dari: http:// www. depkes.go.id/downloads/Profil_Kesehatan_Indonesia_2010.pdf. Diakses: 5 Maret 2019.
15. (2012). *Pencegahan Dan Pemberantasan Demam Berdarah Dengue*. Jakarta : Dirjen Pengendalian Penyakit Dan Penyehatan Lingkungan. Diunduh dari: http:// www. depkes. go.id/ resources/download/pusdatin/infodatin/infodatin%20dbd%202016.pdf. Diakses: 5 Maret 2019.
16. Krianto S. (2013). *Hubungan pengetahuan keluarga tentang penyakit DHF dengan sikap keluarga dalam pencegahan penyakit DHF*. Jurnal Florence Vol VI No. 2 Juli 2013.
17. Lukluk, Z., dan Bandiyah, S (2011*). Psikologi Kesehatan*, Jogjakarta : Muha Medika.
18. Notoatmodjo, S. 2014. *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta.
19. Notoatmodjo S. (2007). Promosi kesehatan dan ilmu perilaku. Rineka cipta : Jakarta.
20. Nursalam. (2008). *Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan*, Jakarta : Salemba Medik.
21. Nasution, N, Ambarwati, F.R. (2014). *BukuPintar Asuhan Keperawatan Kesehatan Jiwa.* Yogyakarta: Cakrawala Ilmu.
22. Sari,Wulan (2012). *Hubungan Tingkat Pengetahuan dan Perilaku PSN dengan Keberadaan Jentik Aedes Aegypti di Desa Ngesrep Kecamatan Ngemplak Kabupaten Boyolali*. Jurnal kesehatan ISSN 1979-7621; 5 hal 66-73.
23. Satari, Hindra dan Mila Meiliasari (2013). *Demam Berdarah Perawatan Di Rumah & Rumah Sa*kit. Menu Cetakan Ke V. Jakarta: Puspa Swara.
24. Soemantri, Umam, J (2016). *Pencegahan dan Pemberantasan DBD Melalui Intervensi Lingkungan*. Publikasi Ilmiah : Jurnal *Vocational Intervention ;* IKKM : No. 8 Volume 2 : Edisi 1.
25. Soekanto, Soerjono (2010). *Sosiologi Suatu Pengantar*. Jakarta : Rajawali Pers.
26. Sarwono, SW (2012). *Pengantar Psikologi Umum*. Jakarta : Raja Grafindo Persada.
27. Soedarmo, S.P. Sumarmo, (2010). *Demam Berdarah Dengue pada Anak* : Jakarta, Universitas Indonesia.
28. Widoyono. (2013). *Penyakit Tropis Epidemiologi, Penularan, Pencegahan, dan Pemberantasannya.*

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ALTERNATIVE MODIFICATION OF WASTEWATER (SPAL) CONTENT OF E.COLI CONTENT IN DUG WELLS IN PUSKESMAS WORKING AREA

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ABSTRACT

The presence of Colifaecal bacteria in clean water indicates contamination caused by dirt. The discovery of E. Coli in water is thought to endanger human health, because the water is suspected of containing pathogenic microorganisms, which include viruses, bacteria, protozoa, and parasites which are transmitted through fecal material.. The research objective is tofind out the bacteriological content of E. Coli in dug well water by modifying the sewerage channel in the Darul Imarah Health Center Work Area, Aceh Besar District in 2019. This type of research is a Quasi-Experimental research method, non-equivalent control group design with analytical tests (chi square test). The subject of this study was the number of E. Coli in dug wells before and after alternative modifications of wastewater disposal channels. Data collection was carried out by interviews and surveys as well as conducting interventions. The results of this study were the presence of e.coli bacteria in the dug wells from the three samples examined an average of 5 MPN E.Coli/100 ml before the SPAL modification, whereas after the SPAL modification had an effect on reducing the number of E.Coli bacteria in the wells, where the value of p < 0.05 is 0,

Keywords:SPAL, E. Coli, Dug Wells.

PRELIMINARY

SHousehold waste is waste originating from kitchens, bathrooms, laundry, former household industrial waste and human waste. Waste is waste or something that is not used in the form of liquid, gas and solid. In wastewater there are chemicals that are difficult to remove and dangerous. These chemicals can give life to germs that cause dysentery, typhoid, cholera and other diseases. The waste water must be treated so that it does not pollute and does not endanger the health of the environment. Wastewater must be managed to reduce pollution.

Diarrheal disease is a disease with high morbidity and mortality to date, so that this disease is still considered a health problem that cannot be overcome by developing countries such as Indonesia. In developing countries, children under 3 years of age experience an average of 3 episodes of diarrhea per year. Diarrhea can cause loss of nutrients that children need during their growth period. Diarrhea is still the biggest cause of death for toddlers in Indonesia. Because diarrhea itself in Indonesia is the number two killer of toddlers after ARI (Acute Respiratory Infection) and every year 100,000 toddlers die from diarrhea.

One of the causes of diarrheal disease is improper management both at home and in health facilities. Meanwhile, from the results of the household health survey (SKRT) in Indonesia in the Ministry of Health of the Republic of Indonesia, diarrhea is the number two cause of death in toddlers, number three in infants and number five for all ages. Cases of finding diarrhea handled in Indonesia in 2017 were 4,274,790 (60.4%) cases. (Directorate General of P2P, Ministry of Health RI, 2018).

Diarrhea cases in Aceh Province in 2017 amounted to 83,914 cases and are expected to increase in 2018. Data recorded at the Aceh Besar District Health Office, the number of diarrhea cases in 2015

was 15,808 cases, 8,907 men and 7,711 cases of women. The coverage of cases of diarrhea found and handled in 2015 was 1,289 men (16%) less than the case detection of diarrhea in women 1,641 (21%) while the morbidity rate of diarrhea per 1000 population was 411. The percentage of diarrhea cases found and treated was 2010-2015 increased in 2013 (108%) and decreased again in 2015 (19%).

Waste water is a medium for nesting and transmission of dangerous diseases for humans. Dirty water is a comfortable place to breed various bacteria and viruses that cause disease. One of the germs of infectious diseases that reproduce through water intermediaries is diarrhea (Achmadi, 2011).

Microbiologically water quality that does not meet health requirements can cause health problems. The presence of Colifaecal bacteria in clean water indicates contamination caused by human feces. The discovery of E. Coli in water is thought to pose a threat to human health, because the water is suspected of containing pathogenic microorganisms which include viruses, bacteria, protozoa, and parasites which are transmitted through fecal material (Connel and Miller, 1997).

One of the most common facilities used by small communities to collect water from shallow wells and use them as a source of drinking water is dug wells. Meanwhile, shallow well water is the water most easily contaminated by seepage originating from sewage facilities, latrines, livestock pens, and animal waste. Pollution of dug wells is especially common in densely populated residential areas, for example in slum areas (Connel and Miller, 2008).

The high incidence of diarrhea is understandably due to poor environmental sanitation conditions, especially in densely populated areas, where poor environmental sanitation is an important factor in the transmission of diarrheal disease in addition to other factors such as nutritional status, socio-economic status, education, community behavior and so on. Improving environmental sanitation is an effort to improve the human environment so that it becomes a good medium for the realization of optimal health for humans in it. Law no. 23 of 1992 concerning health stated that "Environmental health is held to realize the degree of public health which can be done, among others, through environmental sanitation". (Notoadmodjo, 2000).

After identifying the number of E.Coli based on the shape of the Wastewater Disposal Facility (SPAL) with community wells, then a laboratory examination was carried out to determine whether the community dug wells were contaminated with E.Coli and to what extent the spread of E.Coli had an impact on public health, for the next stage a SPAL design model is carried out that is appropriate for efforts to prevent the spread of E. Coli in the dug wells of the surrounding community.

RESEARCH METHODOLOGY

This type of research is a Quasi Experiment type research method with non equivalent control group design, Quasi Experiment, namely a method to determine the effect of the relationship between cattle barn spacing and certain treatment on the quality of dug well water with bacteriological content and an appropriate SPAL and Septic Tank design model in the Work Area of the Health Center Darul Imarah, Aceh Besar District, 2019.

The experimental design in this study is shown in the table as follows;

Table 3.1. Design Matching Pretest-Posttest Control Group Design

Group	Pre-test	Treat (X)	Post test
P1	O1	X1	O2

Information ;
P1 ; Experiment Group
O1 ; Number of E. Coli before the SPAL modification treatment
X1 ; SPAL Modification Model
O2 ; Number of E. Coli after SPAL modification treatment

The subjects in this study were the number of E.Coli in 3 dug wells, namely dug well 1 at the location of SPAL making with a distance of less than 5 meters from the source of pollution, dug well 2 is a well that is 15 meters away from the source of pollution and dug well 3 is a well which is 50 meters away from the source of pollution, sampling of dug well water is carried out before and after the development of

the SPAL modification model in the Working Area of the Darul Imarah Health Center, Aceh Besar District. While repetition of sampling is carried out every seven days for 4 repetitions to see the amount of E.coli contained in each dug well.

RESULTS AND DISCUSSION

Table 1.1
The number of Coliform and E. Coli Before And Before The Construction Of Alternative Sewers Waste Water In Gampong Denong in the working area of the Darul Imarah Health Center Aceh Besar District in 2019

No	Sample	Distance	Before		After							
			MPN Coliform/100 ml	MPN E. coli/100 ml	MPN Coliform/100 ml				MPN E. coli/100 ml			
					1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
1	A1	5	9	5	8	8	7	5	5	3	3	1
2	A2	15	22	8	20	18	15	10	5	5	5	4
3	A3	30	5	1	5	5	4	2	1	1	0	0

Source: Primary Data (processed) 2019

Based on Table 5.1, the data from the inspection of the Dug Well Water Sample averaged 12 MPN coliform numbers/100 ml of dug well water and the average number was 4.67 => 5 MPN E.Coli numbers/100 ml of dug well water, Based on Permenkes no.416 /Menkes/Per/IX/1990 that the maximum amount of Coliform = 50 per 100 ml of water. For the examination of water samples after the intervention for making alternative modifications to the sewerage, repeat sampling 4 times with each time interval of a week or 7 working days. For sample A1 as the location for the SPAL and Septic Tank production points, the average number of E.Coli from the first collection to the 4th repetition was 3 MPN E.Coli numbers/100 ml of dug well water. Based on Permenkes no.416/Menkes/Per/IX/1990 that for E.

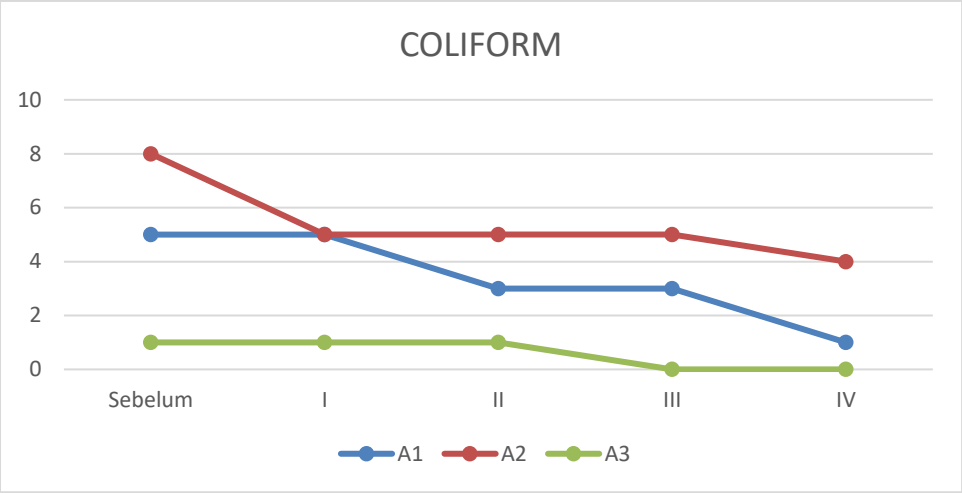
Table 2.1 Percentage of Coliform and E. Coli Before And After Construction Of Alternative Wastewater Sewers In Denong Village, Darul Imarah Health Center work area Aceh Besar District in 2019

No	Sample	Distance	Before		After							
			MPN Coliform/100 ml	MPN E. coli/100 ml	MPN Coliform/100 ml				MPN E. coli/100 ml			
					1	2	3	4	1	2	3	4
1	A1	5	9	5	11,11	11,11	22,22	44,44	0.00	40.00	40.00	80.00
2	A2	15	22	8	9.09	18,18	31,82	54.55	37.50	37.50	37.50	50.00
3	A3	30	5	1	0.00	0.00	20.00	60.00	0.00	0.00	100.00	100.00

Source: Primary Data (processed) 2019

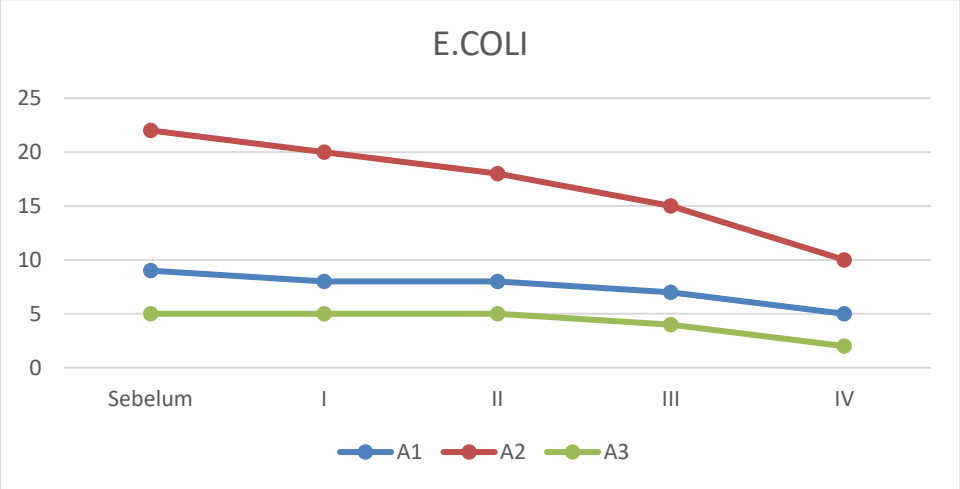
Based on the percentage data above, it can be explained that there is a tendency for the loss of coliform and E.coli numbers to increase, so that on the 4th sampling repetition, where sample A1 had lost 80% of the number of E.coli, sample A2 only reached 50% lost the number of E.Coli, while sample A3 has increased 100% lost the number of E.Coli, for more details can also be seen in graphs 5.1 and graphs 5.2 below;

Graph 1.1
Percentage of Coliform Amount after and before the making of Alternative Wastewater Sewerage in Denong Gampong, work area of Darul Imarah Health Center, Aceh Besar District, 2019



Source: Primary Data (processed) 2019

Graph 1.2
Percentage of the number of E. Coli After And Before The Construction of Alternative Wastewater Sewers in Denong Village in the working area of the Darul Imarah Health Center, Aceh Besar District, 2019



Source: Primary Data (processed) 2019

Table 2.3
Statistical test results for the reduction of E.Coli content in dug wells after the construction of an alternative sewerage channel in Denong village, work area Darul Imarah Health Center, Aceh Besar District, 2019

	Average	std. Deviation	std. Error	95% Confidence Interval for Mean		P value
				Lower Bound	Upper bound	
Distance 5 meters	3,0000	1.63299	,81650	,4015	5.5985	0.012
distance of 15 meters	6,0000	2.70801	1.35401	1.6909	10.3091	
30 meters distance	,7500	,95743	,47871	-,7735	2.2735	
Total	3,2500	2.83244	,81766	1.4504	5.0496	

Source: Primary Data (processed) 2019

Based on the data above, based on the ANOVA statistical test, a p value <0.05 was obtained, namely 0.012, so H0 was rejected so that there was an effect of the SPAL modification on the decrease in the number of E.Coli bacteria in dug wells in Gampong Denong, working area of the Darul Imarah Health Center, Aceh Besar District in 2019.

Existence of Waste Water Sewer/SPAL

The results showed that there was a relationship between the presence of SPAL and a decrease in the number of E.Coli in Denong Village in the working area of the Darul Imarah Health Center, Aceh Besar District in 2019 with the percentage value of increasing the loss of E.Coli Sample A1 (80%), Sample A2 (50%), Sample A3 (100%), the results of research on Gampong Denong in the working area of the Darul Imarah Aceh Besar Health Center can be seen that cases where there is no SPAL will be dug well water contamination by E. Coli bacteria. The results of Samiyati's research (2016) show that there is a relationship between home environmental sanitation and the incidence of diarrhea in toddlers in the working area of the Karanganyar Health Center, Pekalongan Regency. Another factor that causes a significant relationship between SPAL conditions and the incidence of diarrhea is due to environmental conditions that often cause tidal floods, so that SPAL often overflows and puddles arise due to high tidal water and the water flow is obstructed and cannot flow into water bodies. Poor SPAL conditions or open sewerage according to Mardiana, et al (2007), have a greater risk of getting diarrhea 2.56 times compared to closed channels. The existence of an open sewage channel has an effect on the incidence of diarrhea in the last 12 months.

Existence of puddles of waste water in SPAL

The results showed that there was a relationship between the presence of stagnant wastewater in the SPAL and the occurrence of E. Coli bacteria in Denong Village in the working area of the Darul Imarah Health Center, Aceh Besar District. Sample A1 (the number of MPN coliform 9 and the number of MPN E.Coli 5). Sample A2 (the number of MPN coliforms is 22 and the number of MPN E.Coli is 8). Sample A3 (number of MPN coliform 5 and MPN E.Coli 1).

Intervention models carried out

The intervention carried out is to modify the SPAL model that meets the standards so that the existing SPAL in Gampong Denong does not contaminate the surrounding environment, especially water pollution from dug wells, including;

1. Piping Construction
   The piping connects from the bathroom and toilet with a length of 15 M each, made of PVC pipe with a size of 4 inches. The toilet pipe is connected to a septic tank in the form of a ring or ring 1, with a depth of 3 m. The water pipe from the bathroom is connected to the ring 2 reservoir. with a depth of 3 M. see attachment-1
2. Ring-shaped storage well construction
   The holding well consists of the 1st well to collect human waste which is 12 from the Dug Well, while the 2nd well is to collect wastewater from the bathroom and also overflow water from the septic tank. See attachment-2
3. Construction of Septic Tank storage tanks or absorption tanks
   The septic tank is made of size L x W x T = 2.5 x 1.5 x 2.0, filled with mountain stone, palm fiber and gravel, then connected with a pipe from ring 2, then at the end of the building a drainage pipe is installed to The main canal or irrigation canal. See attachment-3

CONCLUSION

Based on the results of research that has been carried out on Alternative SPAL Modifications to the content of E.Coli in dug wells in Gampong Denong in the work area of the Darul Imarah Health Center in Aceh Besar District in 2019, it can be concluded:

1. There isthe effect of the number of E. coli in dug wells due to SPAL conditions that do not meet the requirements for an average of 5 E. coli MPN numbers/100 ml,Based on Permenkes No.416/ Menkes/ Per/IX/1990 that there should not be E. Coli in 100 ml of drinking water.
2. There is an effect of increasing the percentage of the loss in the number of E.Coli numbers after the 4th repetition of the examination where Sample A3 was 100% gone, sample A1 had reached 80%, and sample A2 had 50% remaining.
3. There is an effect of SPAL modification on reducing the number of E.Coli bacteria in wells, where the p value is <0.05, namely 0.012.

SUGGESTION

Based on the results of these studies, some suggestions can be given as follows:

4. The community is expected to be able to make SPAL so that dug wells are not polluted by E.coli bacteria
5. It is hoped that health agencies (Puskesmas) will be able to improve supervision and also promote health of sanitation facilities in the community.
6. The writer is expected to be able to apply and develop appropriate science and technology in order to create a clean and healthy environment.
7. To housing developers/developers to be able to develop this SPAL model to be implemented as part of creating a clean and healthy living environment in a residential or residential area.

BIBLIOGRAPHY

Akhsin Zulkoni, 2011, Parasitology, Nuha Medika, Yogyakarta.
Ahmadi, Omar. 2011, Fundamentals of Environment-Based Diseases, Jakarta: PT Rajagrafindo Persada.
Connel and Miller (1997), Chemistry and Ecotoxicology, University of Indonesia Press, Jakarta.
_____, 2008, Epidemiology of Filariasis, Directorate General of P2 & PL MOH RI, Jakarta.
Aceh Health Office, 2004, Community-Based Total Sanitation Training. P2PI, Aceh.
Djabu, Udin, Kusmantoro, Hary, (1990/1991) Disposal of Feces and Wastewater in Industry, Jakarta: Education for Environmental Health Workers.
Double husada, Sri. 2006. Jakarta Medical Parasitology: A New Style.
Hadi, UK and FX Koesharto. 2006. Mosquitoes. Inside: HS Sigit and KH Upik, Editors. Indonesian Residential Pests: Control, Biology and Control. UKPHP FKH. IPB. Bogor. Pgs 23-51, 52-72.

Ministry of Health Republic of Indonesia, Health promotion in areas with health problems for health workers at puskesmas, Jakarta: Health Promotion Center of the Ministry of Health of the Republic of Indonesia.

MENLH. 2003. Decree of the State Minister for the Environment Number 112 of 2003 (Attachment 1) Concerning Domestic Wastewater Quality Standards. Jakarta.

Novianto, IW 2007. Survival Ability of Culex quinquefasciatus Larvae in Household Liquid Waste Habitat. Thesis. Surakarta: Eleven March University of Surakarta.

Notoadmodjo, S., (2003) Public Health Sciences, Publisher PT Rineka Cipta, Jakarta.

Permenkes RI, 2017, Environmental Health Quality Standards and Health Requirements for Vectors and Disease-Carrying Animals and Their Control, NO 50, 2017.

Rosdiana Safar, 2010, Medical Parasitology: Protozoology, Entomology, and Helminthology, Yrama Widya, Bandung.

Taylor MJ, Hoerauf A, Bockarie M. Lymphatic filariasis and onchocerciasis. Lancet [Internet]. 2010 Oct 2 [cited 2012 Nov 14]; 376(9747): 1175–85. Available from:http://www.ncbi.nlm.nih.gov/pubmed/20739055.

Wirani, R., Sutardji, Siwiendrayanti, A. 2008. Differences in Reducing BOD5 Levels between Trickling Filters of Various Media (Experimental Study on Chicken Slaughterhouse Wastewater Pasar Rejomulyo Semarang 2007). Journal of Community Health, 3 (2): 102-114.

WHO, 2013. Lymphatric Filariasis: Practical Entomology. Italy: World Health Organization

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The Existence of AedesAegypti Mosquito Breeding Base Based on Geographic Information Systems in DarulImarahDistrict, Aceh BesarRegency

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ABSTRACT

Efforts to control Dengue Hemorrhagic Fever (DHF) require complete and accurate information. The spread of the virus can be seen from the perspective of spatial information (geospatial), one of the main components is a picture of the earth both in whole or in part made in analog or digital format. Darul Imarah districtis one of the endemic districts of DHF with 32 cases in 2017. The distribution of cases is made in the form of spatial mapping.The aim of this research is to map the existence of *Aedesaegypti* breeding place based on geographic information system (GIS) in DarulImarahDistrict. This research method is descriptive observational survey using geographic information system modeling through spatial analysis. The research subject is the data of dengue hemorrhagic fever cases in 2017 and *Aedesaegypti* breeding places in the case home environment. Data analysis was performed descriptively, then presented with spatial analysis.The results of the analysis note that the existence of breeding places and dense housing has the potential for DHF. The home environment of DHF patients found less than 100 meters in the presence of breeding places. Through the use of this information, it is expected that the Puskesmas and village servants can move the community's participation in the practice of eradicating mosquito nests so that they can exercise control at vulnerable points / potential in dengue transmission.
Keywords: Breeding place, *Aedesaegypti*, Geogafis Information System.

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by dengue virus which spreads the fastest in the world. This disease is caused by the dengue virus which is transmitted by female mosquitoes, namely from the species *Aedesaegypti* and *Aedes albopictus.*[1] In Indonesia, dengue fever is still a health problem until now and in Aceh Province, dengue fever is one of a serious problem, with the 2016 Incidence Rate (IR) reaching 91.9 / 100,000 population, nationally IR has increased compared to 2015 reaching 30.17/100,000 population.[2]Aceh Besar Regencyis one of the endemic areas of DHF in Aceh with high dengue cases every year. In 2016 there was case increase total 149 cases (IR = 38.9/100,000 population) comparedto 2015 which only numbered 78 cases (IR = 20.3 / 100,000 population).[3]

The presence of dengue cases in Aceh Besar Regencyis supported by several influential factors, such as height of this area less than 100 mdpl, densely populated areas, high vector density and also the community behavior in eradicating mosquito nests that are not optimal yet.[3] DBD vector mosquito breeding sites are puddles in artificial reservoirs such as drums, bathtubs, barrels, buckets, and so on; natural water reservoirs such as tree holes, banana leaves, taro leaves, stone holes, or vases, tires and old bottles, drinking places for birds. Various efforts have been used by health agencies to break the chain of transmission of dengue fever including the discovery and treatment of sufferers, vector control and cross-sectoral cooperation. Vector control activities that have been carried out are fogging and eradication of mosquito breeding activities by involving community participation.

In addition, efforts to control DHF require complete and accurate information, such as thematic maps that present information on the main location of patterns and distribution of cases. Monitoring carried out using tables and graphs cannot yet show trends and spatial patterns. Techniques and methodologies that can be used as a program reference effort that serves to analyze the incidence of diseases on the surface of the earth, namely spatial analysis. Spatial approach with the use of GIS is important to do because by using analysis in GIS it can be seen population density and larvae with frequency of DHF cases. The aim of this study is to map the existence of *Aedesaegypti*breeding place

based on geographic information system (GIS) in DarulImarahDistrict in 2018. The implementation of GIS in handling DHF cases is expected to increase the effectiveness of spatial decision making and be able to integrate the location description with the characteristics of phenomena found in a location.

METHODS

The research method used is descriptive observational survey using Geographic Information System (GIS) modeling through spatial analysis to get an overview of the distribution of DHF cases, DHF prone zones as well as a spatial picture of environmental factors in the incidence of DHF. The study was conducted in the Darul Imarah District.

The research was conducted in the Darul Imarah District, Aceh Besar District. The time of the research was conducted in July - August 2018. The research subjects were data on cases of dengue hemorrhagic fever in 2017 and the housing environment where cases/sufferers lived in Darul Imarah Aceh Besar District. Data analysis was carried out spatially using GIS (Geographical Information System). Spatial analysis of the existence of breeding places for Aedes aegepty mosquitoes using the buffer method.

RESULT

1. Overview of Research Locations

Darul Imarah District has 24.35 km^2area, which is divided into 32 villages, 117 hamlets and 4 Mukim. A large portion of this district is directly bordered by the capital of Aceh Province, the city of Banda Aceh. Distance between DarulImarah District to the capital of Aceh BesarRegency ± 60 km, and distance DarulImarah District to the capital of Aceh Province ± 10 km with the required travel time from the district to the provincial capital ± 30 minutes using public transportation.The population in DarulImarah District, Aceh Besar Regency in 2018 was 53,177 people with 27,030 male and 26,147 female. [5]The level of population development by sex can be seen from the development of comparisons between male and female populations per 100 population.

2. Distribution of DHF Cases in DarulImarah District

The results of the study based on the distribution of DHF cases of in DarulImarah District, Aceh BesarRegency in 2017 can be seen in table below:

Table 1. Distribution of DHF cases in DarulImarah District, Aceh BesarRegency, 2017.

No	Village	Total DHF case	(%)
1.	Lamcot	7	23
2.	Lamblang Manyang	1	3
3.	LamblangTrieng	2	6
4.	KutaKarang	1	3
5.	Lampeuneun	1	3
6.	Tingkeum	1	3
7.	Lambheu	1	3
8.	Gue Gajah	2	6
9.	Punie	4	13
10.	Lee ue	3	9
11.	Pasheu Beutong	1	3
12.	Ajun Jeumpet	5	16
13.	Garot	3	9
Jumlah		**32**	**100**

Sumber : Data Sekunder (2018)

From the table 2, it can be seen the number of DHF cases in DarulImarah District in 2017, the highest incidence of DHF cases occurred in Lamcot Village as many as 7 cases (23%) and AjunJeumpet Village as many as 5 cases (16%). If we examined about the range of regions, both villages are closely related to the capital city of Aceh.

The distribution of dengue cases in DarulImarah sub-district based on the village area can be seen as follows:

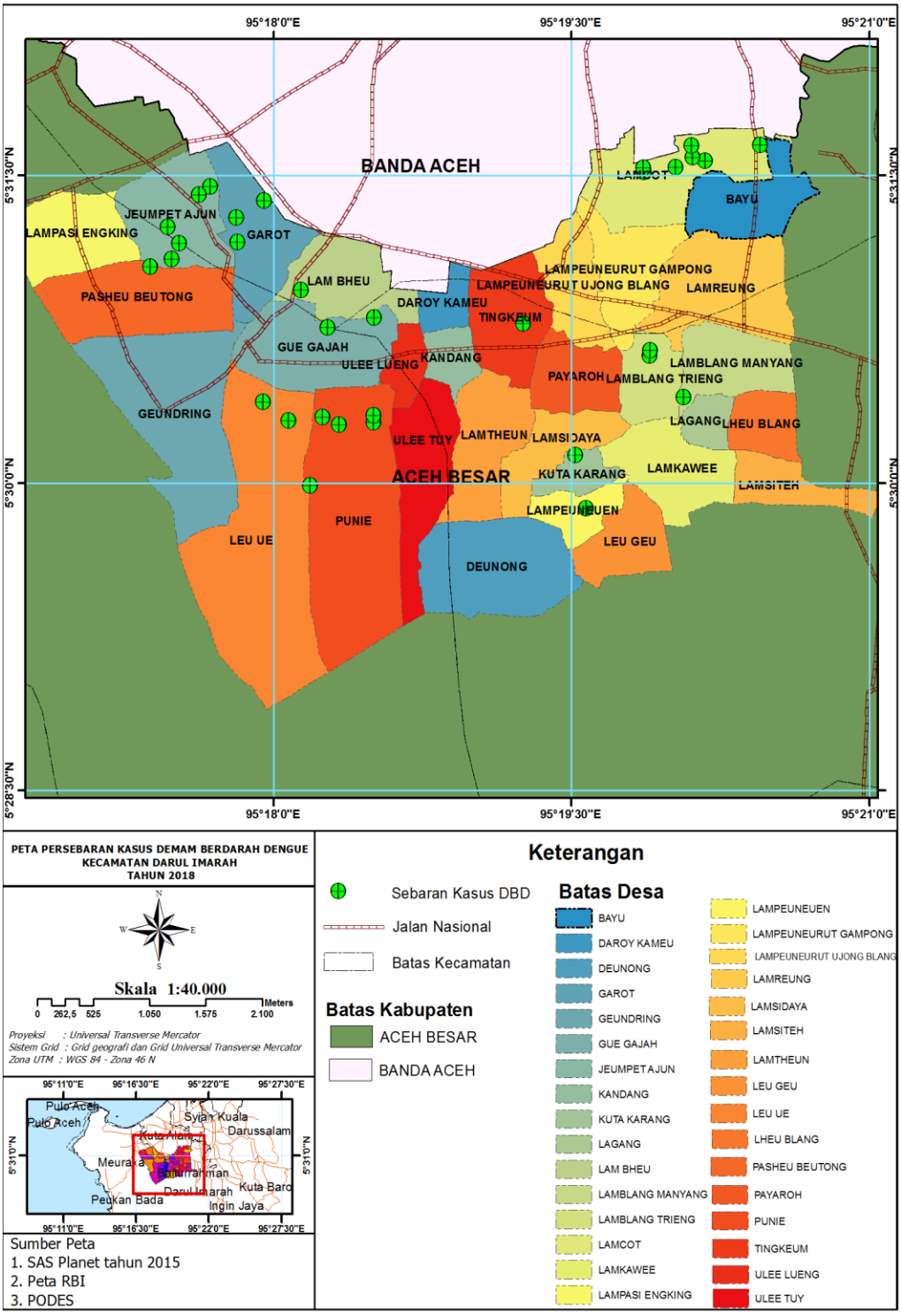

Figure 1. Distribution of DHF cases in DarulImarah sub-district in 2018

From Figure 1 above it is known that the highest DHF cases occur in Lamcot Village. Spatial mapping results show that Lamcot Village has a high level of house density. This shows the tendency of displacement and distribution of cases can occur from a dense environment, conversely from an

environment with low housing density, the distribution of DHF cases may also be low. More details can be seen in the following picture :

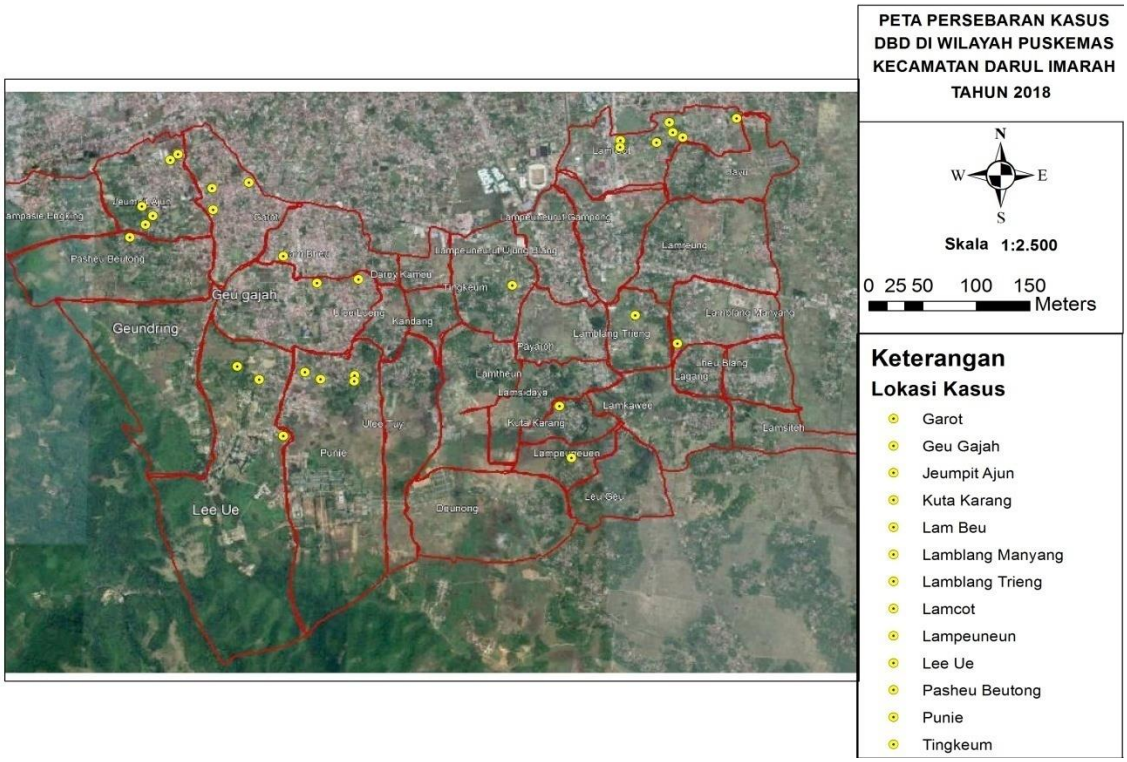

Figure 2. Map of Spatial Distribution of DHF Cases in 2018 DarulImarah District

3. Distribution and Habitat of DHF Vector Developmental Areas

From observations at the location of the incidence of DHF cases, it is known that there are 19 points of the presence of breeding places of *Aedesaegypti* with the discovery of 12 points of Water Reservoir, namely 2 points of AjunJeumpet Village, 1 point of Garot Village, 1 point of Lambheu Village, 1 point of Lamcot Village 2 points LeuUe Village, 3 points Punie Village and 1 point KutaKarang Village. 2 points of Natural Water Reservoir, 1 point AjunJeumpet and 1 point Lamcot Village. 5 points without Water Reservoirs, namely 1 point PasheuBeutong Village, 1 point Lamcot Village, 2 points LamblangTrieng Village, 1 point Lampeuneun Village.

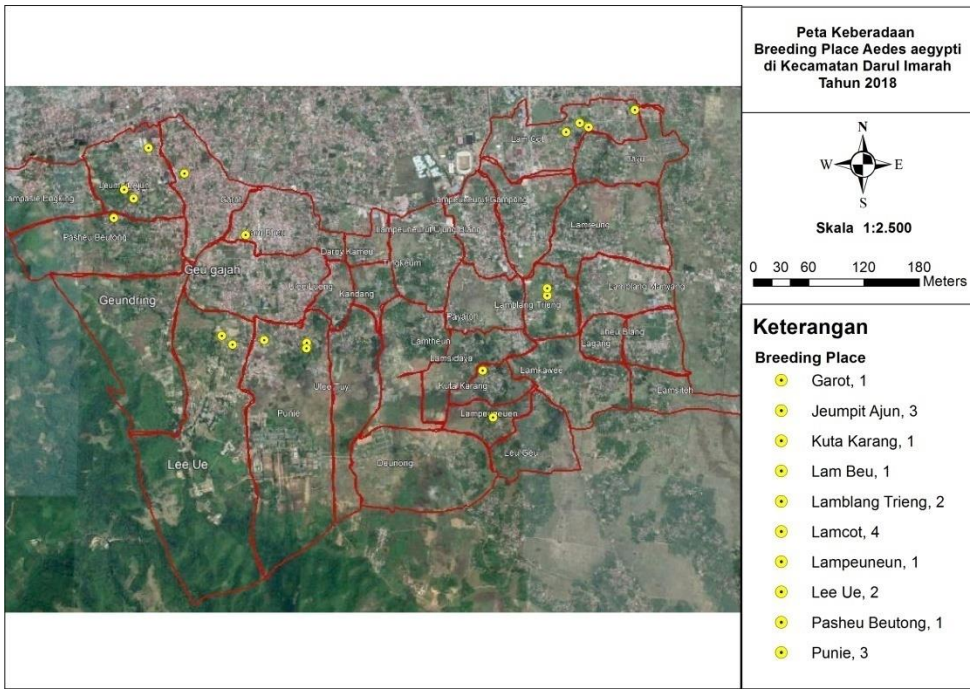

Figure 3 Map of Spatial Distribution of DHF Mosquito Breeding Sites in DarulImarah District 2018

Distribution of breeding places of *Aedes aegypti* mosquitoes based on the type of breeding place can be seen in Figure 4 below:

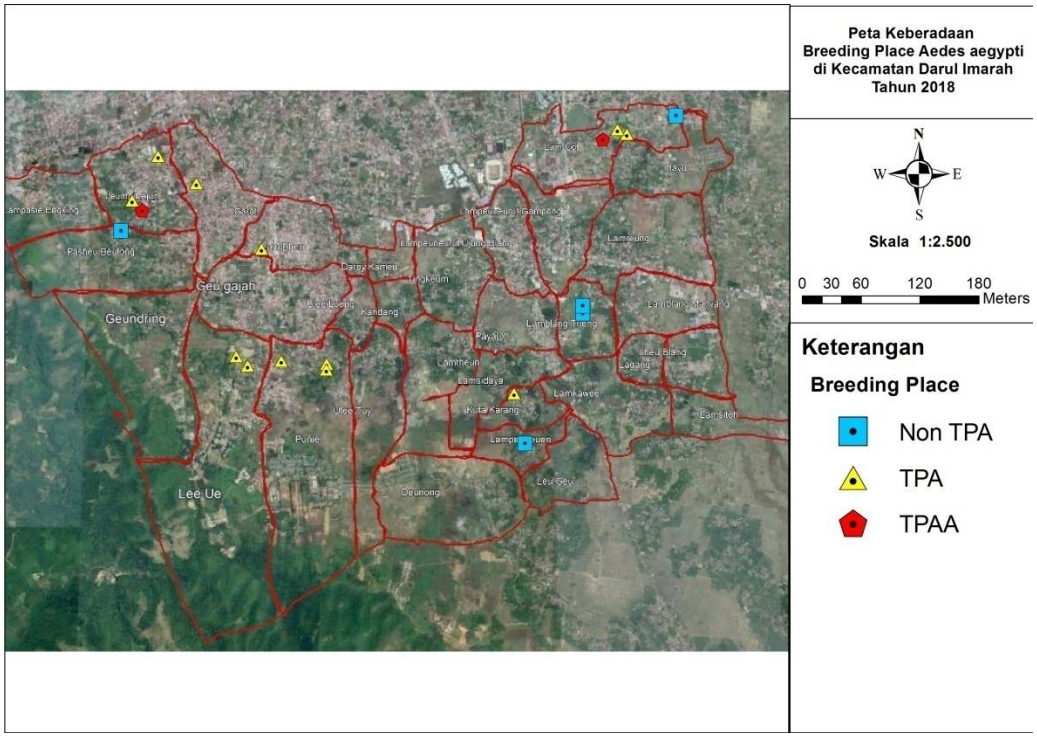

Figure 4 Map of Spatial Distribution of DHF Mosquito Breeding Places by Breed in the DarulImarah District 2018.

Spatial analysis of the existence of Aedesaegypti breeding place on the incidence of DHF was done using the buffer method. Distribution of breeding places and DHF incidents in DarulImarah District can be seen in Figures 3 and 4 which explain the distribution of breeding places. Breeding places were found in DarulImarah District with 19 points. Breeding places are found in the form of piles of used tires, bathtubs, wells, coconut shells, bottles, buckets, and flower vases.

Buffering in the <40 meter zone shows that mosquitoes originating from the breeding point have the potential to cause DHF transmission because 32 cases of DHF enter the buffer zone. In the zone <40 meters breeding place has the potential for DHF transmission to reach other villages. The existence of Breeding place in the case area is in the zone <100 meters which has the potential to cause DHF transmission because all DHF sufferers are at Aedesaegypti normal flight distance.

Discussion

1. Distribution of DHF Cases in DarulImarah District

Based on the results of the mapping of DHF incidence spread s in the DarulImarah District, which is illustrated through the distribution points based on geographical location in the field. The number of DHF sufferers in each village has varies. The number of DHF cases in 2017 mapped as many as 32 cases distributed in 13 villages in DarulImarah District, Aceh Besar Regency. The villages in DarulImarah District that occurred in the case of DHF included AjunJeumpet Village, Lamcot Village, Punie Village, LheuUe Village, Tingkeum Village, Garot Village, PasheuBeutong Village, Lampeuneun Village, Punie Village, LheuUe Village, Tingkeum Village, Garot Village, Pasheu Beutong Village, Lampeuneun Village, Punie Village, LheuUe Village, Tingkeum Village, Garot Village, PasheuBeutong Village, Lampeuneun Village, Pampie Village, Tampe Gampong Village, GampongLamu Regency, Many , LamblangTrieng Village, and KutaKarang were the villages that were the focus of this research.

The results of spatial analysis showed that the highest DHF cases were in Lamcot Village with 7 cases. This can be due to the geographical conditions of the Lamcot village that strongly supports the proliferation of vectors that cause DHF. Lamcot Village has a very large population, with several housing complexes. The condition of the house is also very close one to another.

Environmental conditions with many population housing complexes, usually has a high population density tend to cause high housing density, which can cause a high incidence of DHF as well. Aedesaegypti is a mosquito with a short flight distance of 100 meters or domestic. Resident houses that are close to each other make it easy for mosquitoes to move from one house to another so that the closest neighbors have a greater risk of contracting dengue. Areas that are infected with dengue fever in general are densely populated cities/ sub-dristrict and the distance between houses that are close to each other facilitates disease transmission.6

DarulImarah District region is located at an altitude of 15mdpl, this allowing dengue-transmitted mosquito species to live and thrive. DHF can be transmitted by mosquitoes in areas with certain characteristics. Dengue transmitting mosquito species can be found in areas with a height less than 1000 mdpl.7

2. Distribution and Habitat of Development of DBD Vector

From 32 cases of DHF sufferers in DarulImarah District, 19 breeding places were found as Aedesaegypti breeding sites. These breeding sites include: Water Reservoirs, was found 12 points obtained from 7 villages, namely 2 points of the AjunJeumpet Village, 1 point of Garot Village, 1 point of Lambheu Village, 2 points of Lamcot Village, 2 points of LamcotVillage , Village Punie 3 point, andGampongKutaKarang 1 point. The types found in the form of bathtubs, wells, and rainwater reservoirs.

The Natural Water Reservoir was found as many as 2 points which were obtained from 2 regions of the village, namely 1 point AjunJeumpet Village, and 1 point Lamcot Village. The type found in the form of a coconut shell and banana midrib. Without Water Reservation Site was found as many as 5 points obtained from 4 villages, namely 1 PasheuBeutong Village, 1 point Lamcot Village, 2 points

LamblangTrieng Village, 1 point Lampeuneun Village. The types found were used tires, flower vases, bottles.

The high population density and urbanization have a role in dengue transmission because it affects the increase of mosquito breeding places such as water storage, used tires and trash bins.8One of the existence of Aedesaegypti as DHF vector is influenced by the existence of mosquito breeding sites. The more breeding places found in an area affect the development of mosquito populations. The presence of Aedesaegyptibreeding places in large numbers can increase the risk of breeding and development of Aedesaegytipopulation, so that the DarulImarah District area is a receptive area for dengue transmission.

Buffering in the <40 meter zone shows that mosquitoes originating from the breeding point have the potential to cause DHF transmission because 32 cases of DHF enter the buffer zone. In the zone <40 meters breeding place has the potential for DHF transmission to reach other villages. The existence of Breeding place in the case area is in the zone <100 meters which has the potential to cause DHF transmission because all DHF sufferers are at Aedesaegypti normal flight distance. Tuyishimire (2013) explained that people who live close to the existence of breeding places have a high risk of dengue transmission and are in the average fly distance of mosquitoes tend to be more easily infected with DHF.9

Aedesaegyptiability to fly (female) an average of 40 meters to a maximum of 100 meters, but passively due to wind or being carried by a vehicle can move further. So the existence of mosquito breeding places in that radius is a risk factor for residents in the settlement to get DHF. The results of the study have shown that in the 40 meter buffer zone, almost all DHF sufferers are located at <40 meters distance from the breeding place in the Darul Imarah District. This showed the house of dengue sufferers is in the area with the highest risk of transmission. This study is in line with research by Boewono (2012) and Rohani et al (2010) which states that the majority of DHF sufferers are at a distance of <40 meters from the breeding places of Aedesaegypti larvae.10,11

The high prevalence of DHF is influenced by the high patient density on the existence of breeding places. Residents who live <100 meters should be a priority for prevention and control of dengue transmission.

CONCLUSION

1. Spatial mapping results show that the area that has a high DHF case is one area that has a high density of home environment. The number of cases of DHF in 2017 in DarulImarah District was 32 cases distributed in 13 villages. The distribution of dengue cases in DarulImarah District showed uneven distribution in all villages in the district area.

2. The environment of DHF sufferers found <100 meters from the existence of breeding places. The incidence of dengue is increasingly found at a distance of <40 meters from the existence of breeding places, which means that the exixtence of mosquito breeding places in that radius can be a risk factor for residents in the settlement to be affected by DHF.

SUGGESTION

1. Through the use of information from the results of spatial analysis of DHF incidents, the Puskesmas and the village are expected to be able to mobilize community participation, so that they can control at vulnerable points/potential in dengue transmission.

2. Counseling needs to be done continuously to be able to increase knowledge and change people's behavior so they want to control and eradicate mosquito nests that cause DHF.

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REFERENCES

1. WHO. *Dengue guidelines for diagnosis, treatment, prevention and control*. (2009).
2. Dinas Profinsi Aceh. *Profil Dinas Kesehatan Provinsi Aceh*. (2016).
3. Aceh Besar. *Profil Dinas Kesehatan Kabupaten Aceh Besar*. (2016).
4. Sofia, Suhartono, W. N. E. Hubungan Kondisi Lingkungan Rumah dan Perilaku Keluarga dengan Kejadian Demam Berdarah Dengue Di Kabupaten Aceh Besar The Relationship of Home Environmental Conditions and Family Behavior with Genesis Dengue In Aceh Besar. *J. Kesehat. Lingkung. Indones.* **13,** 30–37 (2014).
5. Ruliansyah A, G. T. dan J. S. Pemanfaatan Citra Penginderaan Jauh dan Sistem Informasi Geografis untuk Pemetaan Daerah Rawan Demam Berdarah Dengue (Studi Kasus di Kecamatan Pangandaran Kabupaten Ciamis, Provinsi Jawa Barat). *J. Aspirator* **Vol.3 No.2,** 80–89 (2011).
6. Badan Pusat Statistik Aceh Besar. *Kecamatan Darul Imarah Dalam Angka*. (2017).
7. Antonius, W. . Kebijakan Pemberantasan Wabah Penyakit Menular, Kasus Kejadian Luar Biasa Demam Berdarah Dengue (KLB DBD)e. in (2003).
8. WHO, D. R. *Pencegahan dan penanggulangan penyakit demam dengue dan demam berdarah dengue. Terjemahan dari WHO Regional Publication SEARO No.29 Prevention Control of Dengue and Dengue Haemorrhagic Fever*. (2003).
9. Wu, P. *et al.* Higher temperature and urbanization affect the spatial patterns of dengue fever transmission in subtropical Taiwan. *Sci. Total Environ.* **407,** 2224–2233 (2008).
10. Pham, H. V, Doan, H. T. M., Phan, T. T. T. & Minh, N. N. T. Ecological factors associated with dengue fever in a central highlands Province , Vietnam. *BMC Infect. Dis.* **11,** 172 (2011).
11. Tuyishimire, J. Pemodelan Spasial Faktor Risiko Demam Berdarah Dengue di Sektor Ruhuha, Rwanda. (University of Twente).
12. Boewono, Damar Tri, Widiarti, Ristiyanto, U. W. Studi Bio- Epidemiologi Dan Analisis Spasial Kasus Demam Berdarah Dengue Daerah Lintas Batas Indonesia – Malaysia (Pulau Sebatik) Kabupaten Nunukan Provinsi Kalimantan Timur. *Buletin Penelitian Kesehatan . Vol 40. No 4* (2012).

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Counseling about family planning counseling in Paya Bujok Tunong Village, Langsa Baroe District, Langsa City

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ABSTRACT
Counseling is a process of interaction between two or more people who build aspects of trust in a certain thing or condition. Therefore the counseling process is very dependent on the strength of communication, understanding of the material (message) and minimizing predisposing factors that can reduce the quality of the counseling. The purpose of the counseling and mentoring is to improve the welfare of mothers and children in order to realize NKKBS (Norms for Happy Small Families). Prosperous) which is the basis for realizing a prosperous society by controlling births while ensuring controlled population growth. The method used in accompanying the use of contraceptives is by means of lectures and demonstrations, which means after the community is provided with knowledge about the types, uses, side effects, advantages and disadvantages of using these contraceptives. The evaluation used is a post test which is direct and accompanied by proof of understanding in the form of direct demonstrations. Mentoring and counseling went according to plan and got results, the majority of people who played an active role in the class could mention and demonstrate the material that had been provided by the resource person. For further activities, the resource person gave suggestions that activities like this should not stop or be seasonal and should involve other family members such as parents, in-laws, husbands and people who have an influence on a mother's life.

Keywords: *Family Planning Counseling*

Introductions

Counseling is a process in which a person helps another in making a decision or finding a way to solve a problem, through understanding the facts and feelings involved in it. Counseling also means a relationship or reciprocal relationship between two individuals (counselor and client) in which the counselor tries to help the client to gain an understanding of himself in relation to the problems he is facing now and in the future. Family planning counseling is a face-to-face conversation or interview between the client and the counselor, which is held on purpose, with the aim of helping the client make a decision that is in accordance with his condition and wishes, and his choice is based on complete information about contraceptives1.

Family planning counseling has the benefit of knowing the stability of potential participants or family planning participants in choosing and using family planning tools. With the family planning counseling process, it can be known whether the family planning methods chosen and used by the family planning participants were really of their own volition or because they followed the wishes of others (persuaded, forced). If family planning counseling is carried out, then the choice and use of family planning methods can be more stable and guarantee the sustainability of family planning participants. Why so? Because the birth control tool was chosen consciously. So, when choosing a family planning tool, participants already have sufficient knowledge about the benefits of the family planning tool. He also knew the various possibilities that could be experienced. He also knows how to handle it if you experience difficulties, for example side effect complaints.

Selection and use of family planning tools that are preceded by family planning counseling will make family planning participants feel safe and comfortable. A sense of security and comfort in using family planning tools can be achieved because family planning counseling helps prospective family planning participants to be able to choose and use a family planning method that suits their own circumstances and needs. Family planning participants choose the contraceptive method they use after receiving an explanation about the various methods or contraceptive methods and the possibilities that they can experience if they use the contraceptive method or method. So, with family planning counseling,

family planning participants know exactly why they chose the birth control device they use. That way he will not be easily influenced by other people's words or other people's bad experiences. He knows that this unpleasant experience doesn't happen to everyone. He knows that the birth control device he is using is his effort to be able to have KKBS2.

Implementation of Counseling also aims to avoid making irrational decisions, avoid regrets and so as not to hinder the KKB program. In carrying out family planning counseling it is advisable to use counseling tools or media to facilitate client understanding so that clients can decide to use the right family planning tool. Family planning services, which are part of the Essential Reproductive Health Service package, need serious attention, because quality family planning services are expected to increase the level of health and well-being3.

Counseling conducted in the community so far has been less successful. One of the factors that has an impact on increasing the maternal mortality rate is the risk of 4 Too (too young to give birth under the age of 21 years, too old to give birth to over 35 years, too close birth spacing of less than 3 years and too many children more than 2). The percentage of mothers who died who gave birth under the age of 20 years and over 35 years is 33% of all maternal deaths, so if the family planning program can be implemented properly again, it is possible that 33% of maternal deaths can be prevented through the use of contraception3..

Research purposes

The purpose of this research is to improve the welfare of mothers and children in order to realize NKKBS (Happy Prosperous Small Family Norms) which is the basis for realizing a prosperous society by controlling births while ensuring controlled population growth

METHOD

In the implementation of the Science and Technology Program for the Community (IbM) Counseling and Assistance in counseling on family planning issues in Paya Beurandang Village, Tanah Wide District, North Aceh Regency, based on the problems found in partners, then the approach methods and working procedures were proposed for the realization of the methods offered.

a. Problems The problems faced by partners are as follows:
    1) Habits of residents in personal hygiene
    2) Community development is less innovative
b. The approach method / solution offered is
    1) Improvement of the model of assistance and guidance for the community
    2) Improve healthy and clean living behavior
    3) Work procedures for the realization of the method offered.

The working mechanism in the implementation of this PKM program is to make initial observations at the two Partners and then develop a work plan. Program socialization activities are carried out to provide an overview to Partners before the main activities begin. Selection assistance and guidance in family planning counseling in the community.

RESULTS

IbM Health Community Service activities are carried out for 4 (four) months in 1 Partner, namely Meunasah Paya Bujok Tunong Village, Langsa Baroe District, Langsa City. The Service Team according to their expertise contributes to the PKM Program activities. The following is a table of Community Service activities that have been implemented

Tabel 1 IbM Health Community Service is carried out for 4 (four) months in 1 Partner, namely Meunasah Paya Bujok Tunong Village
Langsa Baroe District, Langsa City

Activity	PIC	Implementation Day/Date	The place	Results of Program Activities / Achievements
Initial observation stage I to 2	Reva Afdila & Mitra	Monday, 02 September 2022	Paya Bujok Tunong village prayer room	- Preliminary observations have been made - The activity was attended by residents, the village midwife and the village head
Early stage observation II	Reva Afdila & Mitra	Monday, 05 September 2022	Posyandu Paya Bujok Tunong Village	- Preliminary observations have been carried out as well as technical discussions on socialization events and preparation for the implementation of the PKM program - The activity was attended by residents, the village midwife and the village head
Socialization of the PKM Assistance program and counseling in the village	Reva Afdila & Lili Kartika sari	Monday, 03 October 2022	Balai Desa Paya Bujok Tunong	- Sosialisasi program PKM telah dilaksanakan - Kegiatan dihadiri warga, The village midwife and the village head
Mentoring Activities Outreach to community knowledge about family planning counseling	Reva Afdila & Lili Kartika sari	Thursday, 10 October 2022 s/d Friday 12th October 2022	Paya Bujok Tunong Village Hall	- Assistance and Counseling Explain the meaning of family planning - The public can find out about explaining the meaning of family planning, about the advantages and disadvantages of family planning - - The people of Paya Beurandang Village pay attention to how to use the method of contraception regarding nutrition - The community has started to understand. Asking participants about the material that has been given, and reinforcement to mothers who can answer

				questions

DISCUSSION

Based on the results of the community service carried out in stage I, most of the people who were invited were present at the opening of the activity. The resource persons and the team took a persuasive approach so that the community could attend and participate in the mentoring process from start to finish. Village officials strongly support these activities by demonstrating their presence and active participation in the success of mentoring activities and counseling on community knowledge about family planning (KB).

The mentoring activities went well, the community enthusiastically participated in the process after the process carried out by the resource persons and the team. The community as the object of this counseling is expected to be very active so that each material provided can be practiced later in practice sessions (demonstrations).

The use of contraceptives in the form of birth control pills is an alternative for active family planning participants who have been using the injection method. In the current situation, family planning injection services at health facilities are limited, in an effort to avoid direct contact between officers and the public. BKKBN continues to carry out counseling that is adjusted to socializing family planning programs online by utilizing social media conducted by family planning cadres in their respective work areas4.

This research is in line with Bella Novita's 2015 study which stated that husband's support influences the wife's decision-making to use contraception. Examples of husband's support for his wife include: emotional support such as discussing and communicating well; providing reward support such as giving consent to use one of the contraceptives available; Instrumental support includes providing needed assistance such as a husband willing to pay for it, willing to take his wife to a health care facility to get family planning services5.

According to Kundre & Rina in 2018, husbands and wives jointly discuss and choose the appropriate contraceptive method, finance the expenses for contraceptive services and jointly pay attention to the side effects of using the chosen contraceptive7.

CONCLUSION

Mentoring and counseling activities It is hoped that the participants will always perform Personal Hygine and use contraceptives and know the advantages and disadvantages of each Contraceptive Device in their daily lives.

Reference

Ahmad, Rohani. 1997. *Media* Intruksional Edukatif*. Jakarta: Rineka Cipta*

AS, Enjang. 2009. *Komunikasi Konseling.* Bandung: Nuansa.

Fathonah, Siti. 2012. *Buku Pegangan Tenaga Penggerak Desa/Kota (TPD/TPK)* Bandung: BKKBN Propinsi Jawa Barat.

Kemenkes RI, 2020 “Panduan Pelayanan Keluarga Berencana dan Kesehatan Reprodukdi dalam situasi pandemi COVID-19*"Kemenkes RI, p, 2020.*

Bela Novita Amaris Susanto,2016 “Hubungan dukungan suami terhadap istri dalam dengan keputusan penggunaan alat kontrasepsi.,” pp. 1–14,

Dahlan MS. *Statistik Untuk Kedokteran Dan Kesehatan*. Edisi 4. Salemba Medika; 2016.

Wardani R. Kundre, 2018 “Hubungan Dukungan Suami Dengan Pemilihan Jenis Kontrasepsi Intra Uterine Device Pada Wanita Usia Subur Di Puskesmas Makalehi Kecamatan Siau Barat,” *J. Keperawatan*, vol. 6, no. 2, pp. 1–7..

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THE RELATIONSHIP BETWEEN MOTHER'S KNOWLEDGE AND ATTITUDE WITH EXCLUSIVE BREASTFEEDING IN GAMPONG CEURIH, ULEE KARENG SUB-DISTRICT, BANDA ACEH

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ABSTRACT

Exclusive breastfeeding is breastfeeding from birth until the baby is 6 months old. The achievement of exclusive breastfeeding in Aceh in 2019 is 55%. The main cause is the low knowledge of mothers in exclusive breastfeeding. Early and exclusive breastfeeding will help prevent various childhood diseases, especially gastric disorders, respiratory tract and asthma in children. This study was to determine the relationship between the knowledge and attitudes of mothers with exclusive breastfeeding. This type of research is analytic cross-sectional. Samples were taken using a total sampling technique of 47 mothers who had babies aged 6-12 months in Gampong Ceurih, Ulee Kareng District, Banda Aceh. The analysis was carried out using the chi-square test to determine the relationship between variables. The results of this study indicate that there are 46.8% of a baby did not get exclusive breastfeeding and 53.2% of babies got exclusive breastfeeding. There is a relationship between the mother's knowledge (p = 0.015) and the mother's attitude (p = 0.023) with exclusive breastfeeding. This study concludes that there is a relationship between the knowledge and attitudes of mothers with exclusive breastfeeding. Researchers suggest that it is necessary to provide health education about exclusive breastfeeding to the whole community, especially mothers who have babies about the benefits of exclusive breastfeeding so that people or mothers who have not given exclusive breastfeeding to their babies can increase their knowledge and will provide exclusive breastfeeding to their babies

Keywords: Knowledge, Attitude, Exclusive Breastfeeding

PRELIMINARY

Exclusive breastfeeding (ASI) in the world is still low. Based on data from the United Nations Children's Fund (UNICEF) in 2012, only 39% of babies under the age of 6 months were exclusively breastfed worldwide, this number also did not increase in 2015, namely 40% success of exclusive breastfeeding worldwide. . China, which is one of the countries with the largest population in the world, only has a success rate of exclusive breastfeeding of 28%. Meanwhile, countries that occupy the 3rd position with the lowest rates of exclusive breastfeeding in the world according to UNICEF data include Somalia and South Africa (WHO, 2015).

Research from the World Health Organization (WHO), states that out of 129 countries around the world, only 22 countries have met the current target. The rate of exclusive breastfeeding is still low, namely only 41%. WHO recommends exclusive breastfeeding for the first 6 months of life, followed by continuous exclusive breastfeeding with complementary foods until 2 years of age. WHO also recommends skin-to-skin contact, and early infant care without interference, which can significantly increase neonatal survival and reduce morbidity (UNICEF, 2021).

Breastfeeding in Indonesia is currently quite concerning, the coverage of exclusive breastfeeding in Indonesia is still low due to low public awareness of encouraging increased breastfeeding. The phenomenon of young mothers not breastfeeding their children does not only occur in developed countries but in developing countries including Indonesia. The promotion of formula milk greatly influences the thinking of mothers who lack knowledge about breastfeeding (Nurkhayati A, 2021).

Global Nutrition Goals 2025 has set a target of exclusive breastfeeding or 50%. But the fact is that around the world there are only 38% of babies aged 0-6 months get exclusive breastfeeding. A recent study found that 11.6% of deaths in children under the age of 5 years were caused by non-exclusive breastfeeding. 54.3% of all babies aged 0-6 months nationally were given exclusive

breastfeeding, 1,348,532 babies were absolute, or 1,134,952 babies aged 0-6 months were not exclusively breastfed (Ministry of Health RI, 2018).

Exclusive breastfeeding for 6 months and continued until 24 months of age. Starting from the age of 6 months, babies get complementary food that is nutritious according to their growth and development. Exclusive breastfeeding is not giving the baby other foods and drinks, including water, apart from breastfeeding (except medicines, vitamin/mineral drops, and expressed breast milk). The achievement of exclusive breastfeeding in Aceh in 2019 was 55%, a decrease from the previous year of 61% (Aceh Health Profile 2019).

The baby's health can be maintained properly by fulfilling the necessary nutritional needs. Babies need adequate nutrition for good growth, especially in brain growth. Infants 0-6 months are at a growth stage that is very susceptible to disease, babies at this stage have digestive organs that are still weak, therefore breast milk is the most appropriate source of nutrition, breast milk (ASI) is the best natural nutrition for babies because contains the energy and substance requirements needed during the first 6 months of a baby's life (Astutik, 2014).

The preliminary survey conducted by researchers in Gampong Ceurih, Ulee Kareng District, Banda Aceh City, based on interviews conducted with 10 mothers who visited the Posyandu in Gampong Ceurih, found that more than half of the mothers interviewed did not know the benefits of exclusive breastfeeding, they trusted their previous experience with providing additional food for their children to remain in good health. Based on these problems, the study aimed to determine the relationship between the knowledge and attitudes of mothers with exclusive breastfeeding in Ceurih Village, Ulee Kareng District, Banda Aceh.

RESEARCH METHODS

The research method used is an analytical survey. The measurement design is carried out in a cross-sectional manner, namely a research design by measuring or observing at the same time (one time). The research was conducted in Gampong Ceurih, Ulee Kareng District, Banda Aceh. The research was conducted in July - August 2022.

The population in this study were all mothers who had babies aged 6-12 months in Gampong Ceurih, Ulee Kareng District, Banda Aceh, totaling 47 people. This research sample uses.

Sampling technique with the total sampling method. The variables in this study consist of dependent and independent variables. The dependent variable is exclusive breastfeeding. The independent variables are Knowledge and Attitude.

Methods of data collection in the study using primary data were obtained through a list of questions in a questionnaire that had been prepared previously based on the research objectives and then given to respondents, namely mothers who had babies aged 6-12 months living in Gampong Ceurih and then conducted interviews. Secondary data was obtained from reports and official documents through the Ulee Kareng Health Center, the head of Gampong Ceurih, and records at the research location.

Data analysis in this study used univariate analysis using descriptive statistical tests which aimed to get an overview of the distribution of frequencies and percentages of each variable studied, namely knowledge, attitudes, and exclusive breastfeeding. The data is presented in the form of a frequency distribution table.

Bivariate analysis was conducted to determine the relationship between each independent variable (knowledge and attitude) and the dependent variable (exclusive breastfeeding). The statistical test used chi-square at the 95% confidence level, namely $\alpha = 0.05$. With the provision that if the p-value <0.05 then there is a significant relationship between the two variables.

RESULTS

Table 1. Characteristics of Respondents

No	Characteristics	F	%
1	**Age**		
	1. < 20 years	6	12,8

	2. 20 – 35 years	31	66.0
	3. > 35 years	10	21,3
	Total	**47**	**100**
2	**last education**		
	1. SD	4	8,5
	2. Junior High School	5	10,6
	3. Senior High School	32	68,1
	4. PT	6	12,8
	Total	**47**	**100**
3	**Profession**		
	1. IRT	32	68,1
	2. Self-employed	10	21,3
	3. Civil servants	5	10,6
	Total	47	100
4	**Parity**		
	1. Primiparous	11	23,4
	2. Scundipara	23	48,9
	3. Multipara	13	27,7
	Total	**47**	**100**

Based on age group, it was found that the majority of respondents aged 20-35 years were 31 respondents (66%), those aged > 35 years were 10 respondents (21.3%), and a minority aged < 20 years were 6 respondents (12.8%).

Based on the education group, it was found that the majority of respondents were educated32 respondents (68.1%) from high school, 6 respondents (12.8%) had a university education, 5 respondents (10.6%) had junior high school education and 4 respondents (8.5%) had elementary school education.

By classParity found that the majority of parity scundipara respondents were 23 respondents (48.9%), multipara parity was 13 respondents (27.7%), and the minority primipara were 11 respondents (23.4%).

Table 2. Exclusive breastfeeding based on knowledge and attitude

Variable	n	(%)
Exclusive breastfeeding		
Yes	25	53,2
No	22	46,8
Knowledge		
Not good	12	25.5
Well	35	74.5
Attitude		
Not good	14	29,8
Well	33	70,2
Total	**47**	**100**

Exclusive breastfeeding in Ceurih Village, Ulee Kareng District, Banda Acehthe majority of respondents who gave exclusive breastfeeding as many as 25 respondents (53.2%), and the minority of respondents who did not give exclusive breastfeeding as many as 22 respondents (46.8%).

Based on research results on knowledge of breastfeeding mothers in Gampong Ceurih, Ulee Kareng District, Banda Aceh, in 2022 that the majority of respondents who have good knowledge are 35 respondents (74.5%), and a minority of respondents who have poor knowledge are 12 respondents (25.5%).

Based on the results of Attitude ResearchBreastfeeding mothers in Gampong Ceurih, Ulee Kareng District, Banda Aceh in 2022, the majority of respondents had a good attitude 33 respondents (70.2%), and a minority of respondents had a bad attitude 14 respondents (29.8%).

Table 3. The relationship between knowledge and attitudes with exclusive breastfeeding

Variable	Exclusive breastfeeding				Total		*P*-Values	OR (CI : 95%
	Yes		No					
	n	%	n	%	n	%		
Knowledge								6,667
Not good	10	83.3	2	16,7	12	100	0.015	(1,269-35,035)
Well	15	42,9	20	57,1	35	100		
Attitude								4,976
Not good	11	78.6	3	21,4	14	100	0.023	(1,166-21,242)
Well	14	42,4	19	57,6	33	100		

Based on table 3 shows that the variables of knowledge and attitude are significantly related to exclusive breastfeeding.

DISCUSSION

The results of the analysis using the chi-square test obtained p = 0.015 (p <0.05) so it can be concluded that there is a relationship between mother's knowledge and exclusive breastfeeding in Gampong Ceurih, Ulee Kareng District, Banda Aceh. The results showed that the proportion of exclusive breastfeeding was greater for mothers who had good knowledge than for mothers who had poor knowledge. Respondents who did not give exclusive breastfeeding gave other foods such as honey, formula milk, porridge, bananas, and water when the baby was less than 6 months old. Respondents stated that breast milk was not enough for babies, so additional food had to be given. This additional food is believed to help meet the baby's food and drink needs.

This is in accordance with the theory put forward by notoatmodjo (2003) which states that knowledge is a very important domain in the formation of one's actions or behavior. A person's knowledge of health is one of the predisposing factors that influence a person's behavior, so if during pregnancy they do not receive information about or counseling about exclusive breastfeeding, it will affect the mother's behavior in breastfeeding her baby (Suhartono, 2012).

The results of this study are in line with the results of research conducted by Resytesya Mulianda (2010) which said that there is a relationship between knowledge of breastfeeding mothers and exclusive breastfeeding. This means that breastfeeding mothers who have good knowledge about exclusive breastfeeding will also provide exclusive breastfeeding.

The results of this study were also supported by the results of Aulita's research (2011) which obtained the results that there was a relationship between a mother's knowledge and exclusive breastfeeding to infants, where the better the mother's understanding of the benefits of exclusive breastfeeding, the mother will be more motivated to provide exclusive breastfeeding to the baby. Low knowledge about the benefits and purpose of exclusive breastfeeding can be the cause of the failure of exclusive breastfeeding in infants. Lack of mother's knowledge can be caused during pregnancy checks (Ante Natal Care), mothers do not receive intensive counseling about exclusive breastfeeding, the contents and benefits of breast milk, breastfeeding techniques, and the disadvantages of not giving exclusive breastfeeding (Purwanti, 2008).

The results of the analysis using the chi-square test obtained p = 0.023 (p <0.05) so it can be concluded that there is a relationship between maternal attitudes and exclusive breastfeeding in Gampong Ceurih, Ulee Kareng District, Banda Aceh. The results showed that the proportion of exclusive breastfeeding was greater for mothers who had a good attitude than for mothers who had a bad attitude.

Respondents who did not give exclusive breastfeeding stated that there was a fear that the milk produced would not be enough to be given to the baby, giving only breast milk was not able to overcome hunger in the baby and the mother also stated that she did not give the first breast milk to her baby because she trusted the first breast milk. out is stale milk.

This study proves that the mother's attitude is one of the factors that can influence exclusive breastfeeding. Mothers who have a positive attitude towards exclusive breastfeeding are 1.9 times more likely to give exclusive breastfeeding to their babies compared to mothers who have a negative attitude. This result is in line with previous research in Manado City which stated that there was a relationship between maternal attitudes and exclusive breastfeeding of infants (Nurleli et al., 2018; Sjawie et al., 2019). attitudes towards exclusive breastfeeding. In other words, the better the attitude, the greater the chance of exclusive breastfeeding.

Most of the respondents who had a negative attitude did not give exclusive breastfeeding to their babies, namely 62.4%. Based on the results of the questionnaire answers, the majority of mothers answered that they agreed that their babies were given additional food at the age of fewer than 6 months. An attitude that lacks foundational trust regarding the meaning of exclusive breastfeeding makes mothers not only give breast milk for the first 6 months. Generally, the reasons for mothers not giving only breast milk are fear of not producing enough milk, or the quality of breast milk is not good enough, delays in starting breast milk, and the belief that the baby needs additional fluids (Assriyah et al., 2020)

A person will do an action if he views the action positively. Beliefs can shape a person's attitude toward doing an act or not. This belief can come from one's experience with the behavior in question in the past, but it can also be influenced by information about that behavior. Attitudes have several characteristics, including attitudes that are not inborn but are learned or formed based on experience (Marwiyah & Khaerawati, 2020).

CONCLUSION

The results of this study indicate that the 47 respondents who were studied, who gave exclusive breastfeeding were 53.2% and who did not give exclusive breastfeeding were 46.8%. There is a relationship between knowledge and attitudes of mothers with exclusive breastfeedingin Gampong Ceurih, Ulee Kareng District, Banda Aceh.

Suggestions to further increase the promotion of exclusive breastfeeding and not to introduce or encourage breastfeeding mothers to give formula milk as a substitute for exclusive breastfeeding, to socialize more exclusive breastfeeding to working and non-working mothers, to increase knowledge about exclusive breastfeeding by attending counseling and seeking information through print media or electronics.

BIBLIOGRAPHY

1. Assriyah, H., Thaha, A.R., & Jafar, N. (2020). Hubungan pengetahuan, Sikap, Umur, Pendidikan, Pekerjaan, Psikologis, dan Inisiasi Menyusui Dini dengan Pemberian ASI Eksklusif di Puskesmas Sudiang. *Jurnal Gizi Mayarakat Indonesia* (*The Journal of Indonesian Community Nutrition*), 9(1). https://doi.org/https://doi.org/10.30597/jgmi.v9il.10156
2. Astutik, R.Y. (2014). *Payudara dan laktasi*. Jakarta: Salemba Medika.Aulita (2011). Faktor-faktor Yang Mempengaruhi Pola Pemberian ASI Eksklusif. Jurnal Maternitas.
3. Kemenkes RI, (2018). Data dan Informasi Profil Kesehatan Indonesia. Jakarta: Kementrian Kesehatan Republik Indonesia.
4. Marwiyah, N., & Khaerawati, T. (2020). Faktor-Faktor yang berhubungan dengan Pemberian ASI Eksklusif pada Ibu Bekerja di Kelurahan Cipare Kota Serang. Faletehan Health Journal, 7(1), 18-29.https://doi.org/https://doi.org/10.33746/fhj.v6il.25.
5. Mulianda, Resytesya. 2010 Hubungan pengetahuan dan sikap Ibu terhadap pemberian ASI Eksklusif di Posyandu Delima II Desa Baru Dusun II Batang Kuis tahun 2010.
6. Nukhayati A. (2021). Hubungan Antara Pengetahuan Ibu Tentang ASI Ekslusif Dengan Motivasi Pemberian ASI Eksklusif.
7. Profil Kesehatan Aceh. (2019). http://www.dinkes.acehprov.go.id
8. Purwanti (2008). Faktor-faktor yang mempengaruhi Pola Pemberian ASI Eksklusif. Jurnal Kesehatan.
9. Suhartono, Suparlan. (2012). Filsafat Ilmu Pengetahuan, Jogyakarta: Ar-Ruzz Media.
10. UNICEF. (2021). Word Brestfeeding Week 2021: *Greater support needed for breastfeeding mother in Indonesia amid* COVID-19.UNICEF.
11. WHO. (2015). *Global Strategi for infant and young Child Feeding*. WHO: Geneva.