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The Affairs of Anopheles Mosquito in the Working Area 2015 Hamadi Puskesmas Kota Jayapura

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ABSTRACT

Mosquitoes are arthropods that many of us encounter in our lives. One type of mosquito encountered in Indonesia is Anopheles, sp. The genus Anopheles, sp. Is a mosquito transmitting several diseases, mainly malaria. In Papua province, three species of Anopheles, sp, were found to act as malaria vectors, namely: Anopheles farauti, Anopheles koliensis, and Anopheles punctulatus (Elyazar, et al, 2013). The purpose of this study was to determine the density of Anopheles, sp in the working area of the City of Jayapura Hamadi Health Center in 2015. The samples in this study were 429 people with malaria homes.

Based on the results of the study, catching mosquitoes in 429 samples in 3 districts and 2 villages, the density of Anopheles sp mosquitoes perched on the wall was 720 individuals with a density (KN) of 1.67 tails/ person/hour. The results of mosquitoes and mosquitoes were identified at 429 samples of capture location houses consisting of 3 Districts and 2 Villages, the most common type of mosquito was obtained from the genus Anopheles sp, which was 2452 of 3140 mosquitoes caught and identified. For Culex sp mosquitoes, there are 640 tails from 3140 tails and Aedes sp mosquitoes which are 68 tails. Based on the results of the study it was found that the incidence of malaria in the work area of Hamadi Community Health Center was 9.19%, meaning that there were 9.19% of malaria sufferers among 100 residents in the Hamadi Community Health Center working area said the incidence of malaria was high.

The conclusion is that the density of Anopheles sp and malaria cases in communities in the Hamadi Community Health Center density of Anopheles sp mosquitoes with the feed of MHD bodies in the working area of Hamadi Health Center is 0.275 individuals/person/hour. Suggestions that can be given are in preventing the occurrence of malaria, the community will maintain and maintain habits and pay attention to the conditions/ conditions around the yard, if they get sick, immediately go to the doctor or community health service center for treatment so that they know the symptoms illness, sleeping at night must use mosquito nets or mosquito repellent and install wire netting on house ventilation, to prevent entry of mosquitoes into the house.

Keywords: *Anopheles sp. Mosquito Density.*

Introduction

The genus Anopheles, sp. Is a mosquito transmitting several diseases, mainly malaria. In Indonesia there are around 80 species of Anopheles, sp whereas those stated as malaria vectors are as many as 22 species Arsunan[1]. In Papua province, three species of Anopheles, sp, were found to act as malaria vectors, namely: Anopheles farauti, Anopheles koliensis, and Anopheles punctulatus (Elyazar, *et al*, 2013).

The World Health Organization (WHO) estimates that in 2012 there were 207 million malaria cases in 3.3 billion people, and caused deaths in around 627 thousand residents. The highest malaria cases in the world occur in Africa and other poor countries. In Africa 90% of deaths from malaria occur in children under the age of 5 (WHO, 2013).

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Based on Indonesia's health profile in 2012, the national figure for Annual Parasite Incidence (API) or the number that shows a positive incidence of parasites in the blood of patients, shows a downward trend although it is still volatile[3]. API in 2007 amounted to 2.89/1000 population, decreased to 2.47/1000 population in 2008, in 2009 decreased again to 1.85/1000 population, but in 2010 it increased to 1.96/1000 inhabitants and then it dropped to 1.75/1000 population in 2011. In 2011 there were 1,321,451 clinical cases and 256,592 were positive for malaria. In the Ministry of Health's strategic plan for 2010-2014 it aims to reduce malaria-related morbidity from 2 to 1/1000 residents Ministry of Health[4-10].

Case Fatality Rate (CFR) data from malaria obtained from hospitals in Indonesia shows that from 2004 to 2006 there was a drastic decline, from 10.61% to 1.34%. However, from 2006 to 2009, the CFR tended to increase to more than double Epidemiology of Malaria[19].

The Annual Parasite Incidence (API) rate of the Papua Province still exceeds the national figure and is the second highest nationally after West Papua province. Annual Parasite Insidence (API) data in the last 5 years, namely: 2007 amounted to 41.66/1000 population, in 2008 amounted to 18.35/1000 population, in 2009 amounted to 9.94/1000 population, in 2010 amounted to 18.03 1000 residents and in 2011 increasedto 23.34/1000 inhabitants Ministry of Health, Republic of Indonesia[4-10].

Research Purposes: Knowing the Anopheles density, sp in the working area of the Hamadi Health Center in Jayapura City[11] in 2015

Research Method

This research is a descriptive study to describe the density of Anopheles, sp and identify species of mosquitoes caught inside and outside the work area of the Hamadi Health Center in Jayapura City with a survey approach.

Research Result

Calculating the density of mosquitoes that bite people/perched on the location or area of capture, namely Hamadi, Argapura, Numbay, village Tahima and village Tobati the mosquito density can be seen in the table below:

Table 1: The amount of density of mosquitoes that landed and caught with people's bait in the house according to the fishing area in the Working Area of the Hamadi Community Health Center in Jayapura City in 2015

No.	Catching point	Total mosquito	Total House	*Anopheles sp*		*Culex sp*		*Aedes sp*	
				Total	MHD	Total	MHD	Total	MHD
1.	Hamadi	1170	138	372	310	93	77,5	7	5,83
2.	Argapura	944	128	281	234,16	64	53,33	5	4,16
3.	Numbay	796	102	243	202,5	53	44,16	4	3,33
4.	Tobati	118	29	23	19,16	7	5,83	-	-
5.	Tahima S	112	32	31	25,83	11	9,16	1	0,83
Total		3140	429	950	791,65	228	189,98	17	14,15

Source: Primary Data, 2015

Based on the table above shows that the number of Anopheles sp mosquitoes caught in the house by bait body starting from the first catching point to the last catching point is 950 mosquitoes, with a total density (MHD) of 791.65 individuals/person/hour.

Table 2: The amount of density of mosquitoes that landed and caught with bait from people outside the house according to the fishing area in the Working Area of Hamadi Community Health Center, Jayapura City in 2015

No.	Catching point	Total mosquito	Total House	*Anopheles sp*		*Culex sp*		*Aedes sp*	
				Total	MHD	Total	MHD	Total	MHD
1.	Hamadi	1170	138	332	276,66	51	42,5	4	3,33
2.	Argapura	944	128	253	219,16	23	19,16	2	1,66

Conted…

3.	Numbay	796	102	147	122,5	19	15,83	1	0,83
4.	Tobati	118	29	21	17,5	5	4,16	-	-
5.	Tahima S	112	32	26	21,66	7	5,83	-	-
Total		3140	429	779	657,45	105	87,48	7	5,82

Source: Primary Data, 2015

Based on the table above, the number of Anopheles sp mosquitoes caught outside the house by bait body starting from the first catching point to the last fishing point was 779 mosquitoes, with a total density (MHD) of 657.45 individuals/person/hour.

Table 3: The density of mosquitoes that perch and caught on the walls of the house according to the fishing area in the Working Area of the Hamadi Health Center in Jayapura City in 2015

No.	Catching point	Total mosquito	Total House	*Anopheles sp*		*Culex sp*		*Aedes sp*	
				Total	MHD	Total	MHD	Total	MHD
1.	Hamadi	1170	138	169	140,83	120	100	14	11,66
2.	Argapura	944	128	217	180,83	87	72,5	11	9,16
3.	Numbay	796	102	252	210	92	76,66	10	8,33
4.	Tobati	118	29	55	45,83	4	3,33	4	3,33
5.	Tahima S	112	32	27	22,5	4	3,33	5	4,16
Total		3140	429	720	599,99	307	255,82	44	36,64

Source: Primary Data, 2015

Based on the calculations in the table above, the number of Anopheles sp mosquitoes caught on the walls of the house from the first catching point to the last arrest was 720 mosquitoes with a density (MHD) of 599.99 individuals/person/hour. While the total number of mosquitoes on the wall was 720 from 429 houses surveyed. So the catch on the wall is (KN) which is 1.67 tails/person/hour.

Table 4: The number of genera of mosquitoes caught in the Working Area of the Hamadi Community Health Center in Jayapura City in 2015

No.	Catching point	Total mosquito	*Anopheles sp*	*Culex sp*	*Aedes sp*
1.	Hamadi	1170	877	264	25
2.	Argapura	944	751	174	18
3.	Numbay	796	642	164	15
4.	Tobati	118	98	16	4
5.	Tahima S	112	84	22	6
Total		3140	2452	640	68

Source: Primary Data, 2015

Based on the table above, the highest number of genera of mosquitoes caught was Anopheles sp, which was 2542 tails, Culex sp mosquitoes as many as 640 tails and Aedes sp mosquitoes as many as 68 tails from the total number of mosquitoes caught namely 3140 mosquitoes.

Table 5: Malaria Incidence Data at Hamadi Health Center in Jayapura City in 2015

Month	New Sufferers
January	32
February	42

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March	41
April	57
May	32
June	48
July	37
August	45
September	56
October	39
November	-
December	-
Total	429

Source: Secondary data

Conclusion

Based on the results of research and discussion it can be concluded that the density of Anopheles sp and malaria cases in the community in Hamadi Health Center is as follows: The density of Anopheles sp mosquitoes with bait of MHD bodies in the working area of Hamadi Health Center is 0.275 individuals/person/hour who settled on the wall of the house of KN were 1.67 individuals/hour (low density), adult mosquito species in the working area of Hamadi Health Center included Anopheles sp mosquitoes totaling 2452, Culex sp mosquitoes totaling 640 tails, Aedes sp Mosquitoes totaling 68 individuals, malaria incidence Based on the results of the study it was found that the incidence of malaria in the working area of Hamadi Community Health Center was 9.19%.

Suggestion

In preventing the occurrence of malaria, the community continues to maintain and maintain habits and pay attention to the conditions/conditions around the yard. If you get sick, immediately go to the doctor or community health service center (Puskesmas), to get treatment so that you know the symptoms of the disease suffered. Sleeping at night should use mosquito nets or mosquito repellent and install wire netting on house ventilation, to prevent entry of mosquitoes into the house.

Ethical Clearance: Taken from the committee

Source of Funding: Nil

Conflict of Interest: Nil

REFERENCES

1. Arsin. Arsunan A. Analysis of the Effect of Climate Factors on Malaria Events on Kopoposang Island, Pangkajene Regency, South Sulawesi Islands, YARSI Medical Journal. Jakarta. April 2006;14.
2. Aswar A. Introduction to Health Sciences. Medical Book Publishers EGC. Jakarta. 1988.
3. CDC, Life Cycle of Malaria Parasites, http//www.encerta.msn.com. downloaded on February 28, 2011.
4. Republic of Indonesia Ministry of Health. Epidemiology of Malaria. Directorate of Prevention of Eradication of Communicable Diseases and Settlement of Environmental Health. Jakarta. 1995.
5. Republic of Indonesia Ministry of Health. Malaria Eradication Program, Directorate General of P2M and PLP. 1993.
6. Republic of Indonesia Ministry of Health. Malaria Entomology, DG PPM & PLP. Jakarta. 1999.
7. Republic of Indonesia Ministry of Health. Malaria Management Module, Gebrak Malaria. Jakarta. 2001.
8. Republic of Indonesia Ministry of Health. Epidemiology Malaria Module, DG P2M & PLP, 2003.
9. Republic of Indonesia Ministry of Health. Malaria Eradication Program Management Module, DG PPM & PLP. Jakarta. 2003.
10. Republic of Indonesia Ministry of Health. 2003, AMI Data per Province http//www.depkes.go.id. downloaded on February 28, 2011.
11. Imbiri. Heri Fandri. KTI of Anopheles sp. Mosquito Density and Malaria Incidence in Imbi Health Center Work Area in North Jayapura. 2006.
12. Notoatmodjo, Soekidjo. Clinical Health Research Methodology. Rineka Cipta Publisher. Jakarta. 2002.
13. Prabowo, Arlan. Malaria: Preventing and Overcoming It. Puspa Swara. Jakarta. 2007.
14. Sari, Jana Fitria K. Ayomi. Andreas C, Jarona. Marlin M. Health Entomology Practicum Guide, Compiler of Jayapura Polytechnic. 2007.

15. Sushanti Idris - Idram. N, M. Sudomo, I.G. Wayan Djana, Sunardi Empi, Anopheles Fauna in South Tapanuli and Mandailing Natal, North Sumatra, Journal. 2002;30(4). Litbangkes, Jakarta. http://www.litbangkes.com. downloaded on February 16, 2011.

16. www.kesehatanlingkungan.wordpress.com. Downloaded on April 29, 2011.

17. http://laodehabil.wordpress.com/2011/04/09/anopheles-sp/was downloaded on July 6, 2011.

18. http://www.cdc.gov/malaria/falcth.htm#BioPathEpi. Downloaded on February 28, 2011.

19. http://en.us.www. Mozilla.com/en-us/firefox/central/.2008, Epidemiology and Eradication of Malaria html. Downloaded on February 2, 2011.

20. http://www.undp.or.id/pubs/imdg2004/BI/IndonesiaMDGBIGoal6.pdf. Report on the Progress of Achieving the Millennium Development Goals in Indonesia, downloaded on February 4, 2011.

21. http://www.kompas.com/kompas-cetak/0103/01/iptek/tert10.htm. Figures for Clinical Malaria in Irja, downloaded February 4, 2011.

22. http://www.undp.org.id/pubs/imdg2004/BI/IndonesiaMDG_BI_Goal6.pdf Combating HIV/AIDS, Malaria and Other Communicable Diseases. Downloaded on February 5, 2011.