The Role of Community in Malaria Vector Control

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The Role of Community in Malaria Vector Control

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ABSTRACT

There are 40% (3 billion) of the world's population at risk of suffering from malaria with the addition of some 300-500 million cases and 1.5 to 1.7 million people died from suffering from malaria. In Indonesia to date, infectious disease, especially diseases that are transmitted by animals, especially insects, are still a public health problem. This study aimed to determine the role of the community in the prevention, control and eradication of malaria. This research was a qualitative study. Subjects of the study were public, community leaders, and health care providers. Data were analyzed by using content analysis and theory validation source. Community participation in malaria vector control through several ways to eradicate mosquito breeding, usage of mosquito nets, use of insect repellent, avoiding a night out and a survey of patients who return from leave. The community plays an active role in malaria vector control efforts by closing puddles, community service every week, and some people are already using nets.

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1. INTRODUCTION

Malaria is an infectious disease that causes morbidity and mortality in children and adults in developing countries, including Indonesia [1]. The death was due to malaria are estimated more than one million people per year, and are increasing annually [2]. Malaria can cause death of approximately 1-2 million people each year and the addition of about 300-500 million are found each year [3]-[5]. The spread of malaria is mediated Plasmodium-infecting Anopheles mosquitoes. There are four types of Plasmodium species that cause malaria, such as: P.falcifarum, P. vivax, P. ovale, P.malarie. Cases of deaths due to malaria are mostly caused by P. falcifarum [4]. Elimination of malaria through various ways such as: medication management, prevention and control of vector mosquitoes, the malaria eradication program interventions is attempted to do. Targeted elimination of malaria in the whole world according to the Global Malaria Action Plan, WHO, is the number of malaria zero cases at least 8-10 countries in 2015 [6]. Therefore we need cooperation between cross-program and cross-cutting to achieve zero cases and it need supporting to do is both government and society. Community involvement in the eradication of malaria is necessary because the public has an important role not only as objects but as subjects of disease eradication program as well. People who become the subject of an eradication program will impact on the sustainability of the program itself. This is because creating a perception in the community since program is community property can be invote their consciousness. Another case if the public is only the object of program, people will not feel ownership, just as executor, so the sustainability of the program will not run long.

In Indonesia, malaria is disease that threatens the community, especially people living in malaria endemic areas and remote areas far from health services [7]. Kulon Progo is one of malaria endemic areas in Indonesia located in Central Java.

In 2000 Kulonprogo district experienced outbreak malaria (AnnualParasite Incidence / API) 85.9 per 1000 population. Range 2001 to 2010 API has decreased to 0.07 per 1000 population. From 6 villages are not found malaria. In 2000 malaria is not found in 6 villages but in 2007 malaria is found in 94 villages. These cases have increased again starting in August 2011 and there were two people who died of malaria. The increasing of malaria patients in the District KulonProgo caused by the alternation from natural vegetation to crops of economic value such as coffee and cocoa [8]. In 2011 malaria spread throughout many in the district KulonProgo district including malaria-free region in the previous years, so it is set as the outbreak back in 2012 [9]. Malaria can affect the Human Development Index (HDI) increase morbidity and mortality, impair material and child health decrease intelligence, workforce productivity, and harming tourism [5];[10]. Therefore, this study was conducted in order to determine the role of community participation in the eradication programof malaria.

2. RESEARCH METHOD

The study was qualitative and descriptive technique. The research aimed to make systematic observation, factual, clear and accurate description of the facts and characteristics of the population associated with an event in a particular area. Triangulation is used for the approach of this study. The population was all residents in the subdistrictKokapKulonprogo and the subject is the head of the hamlet, village heads, village malaria interpreters, and community health workers. The research instruments were 1).The interview guide that has a function to determine the role of community participation in planning efforts, prevention and eradication of diseases malaria; 2) Observation participatory of subject in the district KulonProgo. Data were analyzed using content analyzes of the way. The process of data analysis through the validation process of the subject and compared with theory.

3. RESULTS AND ANALYSIS

Kokap is suburban area in KulonProgo district which is appoximatelly 32 Km west from Yogyakarta, Indonesia, which is included malaria endemic area that consists of 5 villages such as:Hargotirto, Hargowilis, Hargorejo, Hargomulyo and Kalirejo.

Geographical conditions Kokap are mountains with the description such as 5% flat to choppy, also choppy to hillyand 60% hilly to mountainous. Its administrative center is 250m above sea level with temperatures ranging from 18 ^{0} C to 29 ^{0} C. The number of rainy days is 20 days and the amount of rainfall is 1650mm/years.

Total area of all Kokap is 73.799.505 Hectares, including the 231 Sermoreservoir and its population comprised 9935 head of family, consist of 18 867 male and 19,261 female.Based on the reports of the capture of mosquitoes in the area conducted by Sermo Reservoir in KulonProgo, species of Anopheles obtained are: Anophelesaconitus, Anopheles vagus, Anopheles maculates, Anopheles anularis, Anopheles kochi, Anopheles barbirostris, Anopheles balacensis

Malaria is a serious disease because it can kill up to 2 million people per year and 300-500 people experience pain due to malaria each year. Spread of the disease vectors through female Anopheles mosquito is caused by four species of Plasmodium, namely: Plasmodium Falcifarum, Plasmodium vivax, Plasmodium ovale, and Plasmodium malaria [1]. Most of deaths because by Plasmodium Falcifarum [4].The disease is widely spread due to environmental health factors such as: physical, chemical, biological, and socio-cultural factors that influence the spread of malaria in Indonesia [3]. Other researchers also noted that is influenced by geography, temperature, social economic and local culture [11].

Although malaria eradication program efforts have been made, the explosion of malaria and exceptional outbreak still arises. Constraints are faced by among others; sharp targets for malaria area mapping is not yet completed, health care centers and sub-health centers do not reach the endemic areas especially the quantity and quality of factors with do not support the minimum requirements for the implementation of the program. Besides geographically malaria patients were difficult to reach by any transport resulting mobility difficulties to access health services. The role of public facilities such as transportation, telecommunications, networks, road conditions greatly affect the general public access to health care centers such as community health centers, hospitals and doctors or midwife practices [7].The role of the community in helping themselves to malaria program implementation is still low in motivation, looks as follows: let herself be bitten by a mosquito, make the standing water around the house, sleep in the open or outside the room without using mosquito repellent, the habit of a night out until morning. There is still people

who do not want to take medication according to the instructions, and do not known that Anopheles mosquitoes as intermediaries for distributing very active malaria bite at night. Therefore, this makes malaria difficult to eradicate.

Besides, there are other difficulties found such as resistance falcifarum against Plasmodium malaria drugs such as Irian Jaya, Central Kalimantan and Java. Lack of skilled personnel in the field entomology, the boredom of the officers in carrying out eradication, inaccuracy of report and late report, and activity of surveillance are not sufficient to the low coverage of the discovery and treatment of patients. In addition the mobility of the population in the region Kokap to endemic areas outside Java is due to family economic limitations that resulted in the head of the family works seasonally to Sumatra and Borneo. For example in 2010 there was an increase of outbreaks in the region due to the transmigration from Kalimantan to Kokapto visit family or seasonal workers (miners). [12];[13].

3.1. Community efforts to eradicate mosquito breeding / breeding mosquitoes

Health is right of every human being and one of the elements of well-being is the responsibility of each person. The participation of individuals, families, and communities are indispensable in promoting health. Participating in the health field is visible when individuals, families, and communities are jointly responsible for the health of themselves, their families and the environment, involve in the planning and implementation as well as to solve problems in society. Health development is intended to increase awareness, willingness and ability of healthy life of each individual in the society. Efforts to improve health should be done comprehensively and continuously through disease prevention, health promotion, disease treatment and health recovery.

A society is said to be independent in the health sector if:fistly communities are able to identify health problems and the factors that affect the issue in their living environment, one example is malaria. Community awareness about malaria, clinical symptoms, how to spread both directly and indirectly, how to prevent it, how to control and prevention, environmental factors and physical, chemical, biological, and socio-cultural influence on the increasing incidence of this disease needs to be introduced by the healthcare provider to society. Likewise what actions to take when they are infected with this disease should be understood by all people so that there is not resistance to drugs antimalarial. Some areas have reported a few cases of treatment failure are caused by malaria parasites resistance to antimalarial drugs, especially chloroquine resistance [14]. Public knowledge about the disease is necessary because the number of high morbidity despite low mortality rate it can cause low body resistance, their power decreases, inhibiting smooth because of the tourism sector in the attraction of malaria [15]. Factors affecting malaria in humans are the matter of behavior, where is composed of knowledge, attitudes and actions. While transmission of determinants of malaria is divided into two major categories, namely: [16] the direct factors and indirect factor. The direct factors affect the average human biting mosquitoes in a day, an average of Plasmodium gametocytes in the population and the average ability of daily life in mosquitoes.The indirect factors, including: the environment and climate, rainfall, drought, management of the built environment, changes in the pattern of biting vectors, air temperature, humidity, importation of malaria parasites through population movement and migration of non-immune population.

Secondly communities are able to cope with health problems independently using the potential of the local community. Potentiality that exists in the society such as family wealthfare movement, mathernal and child clinic, integrated health care community, study groups, youth clubs, etc. can be used as a means to provide counseling to improve public knowledge about malaria transmission and its prevention. Efforts made by the people and the government to overcome malaria vectors can be done with the cooperation between local governments, religious leaders, traditional leaders, community leaders and the parties are deemed to be influential among the general public. Efforts are made in the form of:

a. Education and outreach, continually to increase public awareness, reducing the habit of being outdoors mosquito eg until late at night, where the vector is exophilic and exophagic will facilitate mosquito bites. Public awareness about the dangers of malaria will affect people's willingness to eradicate malaria among other healthful environment, use netting, wire netting installed at home and using insect repellent.
b. Establishment of working group in the community that make the community programs including mutual assistance to build aqueducts, dams, road construction, mining, and construction of new settlement / resettlement friendly environment should be kept in a change environment favorable transmission of malaria ("man -made malaria ").
c. Support from the government is fully needed to community efforts that are bottom up, as a continuation of government programs that are top-down evaluation periodically from community groups and governments on programs that have been carried out. Good program to eradicate the disease and economic empowerment programs for the community should be done to eradicated of disease. This is because almost all malaria endemic regions across the world are in poor areas [1]

Through these efforts on malaria control programs are expected to become part of daily life in the community, so that morbidity and mortality decreased.

Increased public awareness will hopefully make people able to maintain and protect themselves against vectors of malaria diseases, can improve health status dynamically and independently.

Based on the results of research in subdistrict Kokap, Kulon Progo, Yogyakarta, Indonesia, public knowledge about the causes of malaria and how the treatment are still low, it is seen from the interview below:

I do not know the cause of malaria, primarily if the pain in order to the clinic, but at the public health center is not free and did not recover .....

From interviews with respondents obtained information nisthat the community in malaria vector control through community service each week to cover the puddles. Efforts that have been made to eradicate mosquito breeding are also carried out by health authorities such as fogging, regular counseling through every maternal and child clinic hamlets.

.....Spraying and extension maternal and child clinic/ health post also conducted by health authorities....

Required personal protective equipment such as necessary long lasting nets (LLNs), door nets, and window nets to avoid mosquitoes bite that carry malaria vector. Based on result of case control study in 2003, the use of personal protective equipment such as mosquito nets, mosquito net installation on windows and doors correlate to malaria incidence [7].

The attitude of society towards malaria awareness is pretty good. They do service projects including weekly to clean up the environment. The role of community leaders in reducing malaria has also been quite good. If there is a puddle of water, community leaders immediately directed the people to perform community service. This is an effort to prevent water pooling which later can become breeding places of Anopheles mosquitoes. This is evident from the results of the interview are as follows:

.....if there is a puddle of water, the nas a public figure, I will give to the community in order to align the stream.....

Controlling environmental factors will affect an infectious disease. Environmental health studies and handling of human relationships with the environment in the balance of the ecosystem aims to improve public health through optimal prevention against diseases and health disorders by controlling environmental factors that can cause disease. Present and future interaction will affectone another [17].

3.2. Community efforts in the use of mosquito nets and insect repellent

The community avoiding mosquito bites in various ways, namely by using mosquito coil, insect repellent cream, use crushed leaves and then rubedon the hands and feet and wear mosquito netswhile sleeping. The use of mosquito nets while sleeping can prevent people from mosquito bites and reduce malaria transmission [18]. The use of mosquito nets in malaria-risk areas in babies and pregnant womenare recommended by the World Health Organization (WHO) in order to eradicate malaria [19]. It is seen from the interview below:

…..... We use mosquito nets if going to bed, and mosquito repellent while watching TV in the afternoon.....

In addition, peopleused toburndry leavesto repelmosquitoesin the afternoon..

.....when going to the field, leaves crushed and rubbed into the hands and feetto avoid mosquito bites.....

.....in the afternoon dried leaves were burned to repel mosquitoes....

From interviews to the respondents, it is known that the nets have been distributed to the entire population in malaria-endemic areas for free, but did not used for the reason because it feels hot when using mosquito nets while sleeping. Bed nets are used only in case of outbreaks.

...right now did not use nets because it was stifling and dry season there is no mosquitoes, and when the rainy season there are many mosquitoes, but if you use a mosquito net will feel hot ....

...right now did not use mosquito nets, because now there is no malaria....

The use of mosquito nets to avoid mosquito bites will affect the number of malarian incidence [19];[7];[5].The mosquito nets are not used by people for many reasons due to lack of awareness and attitude of people to live healthy in order to prevent malaria. Lack of local government monitoring system to supervise the use of mosquito nets cause ineffectiveness of programs that have been initiated [20]. Decreasing the number of malaria cases in the previous period of 7 years from 2004 to 2010 is likely to be the cause. This is in line with research that states that there is a relationship between the habit of using nets with vivax malaria transmission in South Bengkulu, Bengkulu Province [21].

Malaria patients in remote areas of the district Kulonprogro in habit houses with roofs made of bamboo which is not sealed, making it easier for malaria mosquito esentering the house at night and bite in habitants [20]. Based on the results of research are showed 92.8% of patients with malaria in Kokap, Kulonprogo Regency not installed netting on windows and ventilation vent [22]. Approximately 78.4% of the population does not use insect repellent during sleep or leave the house at night [20].Use of mosquito nets when sleeping, and installation of netting on the windows and ventsare in dispensable in malaria-endemic areas to avoid mosquito bites [19].

3.3. Community effortsin the relocation ofthe cattle

The existence of cattle sheds around the house attractive to Anopheles mosquitoes to come. There are about 42% of cattle are in the enclosure surrounding the home of the patient in Kulon Progo Regency [22]. Distribution of malaria vectors in the evening were around the barns [22]. Respondents said that the cage can not be separated from the house because it could be stolen by thieves. It looks from the interview as below:

Cattleplaced around the house...because if it is located far away from home can bestolen by someone.....

3.4. Community efforts to seek treatment

From interviews to research subjects that society given the treatment of patients with malaria to health centers are not free. The result showed that the community data not know about the causes of malaria illness. This is because lack of knowledge and awareness of symptoms when suffering from malaria and the spread of this disease. This is evident from the results of the interview are as follows:

.....Ido notknowthe cause ofmalariaandwhengoingto the clinicfor treatmentis notimmediatelycured.....

Need to understand together that the people affected by malaria will affect the economy of individuals (patients) and the government [1]. Among those affected by malaria will miss time due to illness and should take medication to health care centers, as well as to prevent being transmitted to the society.

Efforts to eradicate malaria program has been undertaken by the government through health centers and sub-health centers, However the service having some problems emerge because hilly area in kokapcan not be reach by transportation but on foot [5].

4. CONCLUSION

Based on research resuts, it can be conclude people play an active role in malaria vector control efforts by closing puddles, community service every week, and some people are already using nets.

After concluding this research, it is advised by author, counseling and motivation are needed in the village, especially for community leaders to improve the knowledge society of the vectors of malaria transmission

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