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Analysis Influence of Mother's Behavior, Socio-Economic, and Physical Home Environment

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Abstract

Indonesia as a developing country is still facing this problem. It is very important to understand the related factors that influence several economic and environmental factors in the regulation of health conditions in Indonesia to find out which programs are more effective. Eco-nutrition has three main areas: public health (access to quality water, sanitation, and health services), socioeconomic (livelihood assets), and malnutrition. This study describes the relationship between socioeconomic factors and public health with malnutrition, stunting, and underweight in Indonesia. Data on the prevalence of malnutrition, stunting, wasting, education level, and public health factors (access to clean water, clean living behavior, utilization of posyandu, complete immunization coverage, the incidence of diarrhea, and incidence of acute respiratory infection (ARI) were obtained from previous research studies. socioeconomic status (poverty level and GRDP/capita) obtained from the Central Statistics Agency (BPS).

Keywords
economic factors; infant condition; eco nutrition

I. Introduction

One of the infectious diseases that can reduce productivity and cause loss economy and contribute greatly toinfant, child, and adult mortality. Malaria infection during pregnancy can cause abortion and birth weight low is malaria, Around 2.3 billion or 41% of the population the world is at risk for malaria.

Every year, an estimated number of cases malaria 300-500 million with 1.5-2.7. Deathsmillion souls. In Indonesia, malaria is one of the infectious disease that is still major public health problem. Malaria disease greatly affects the infant and child morbidity and mortality toddlers and mothers giving birth, in addition to malaria also directly lower work productivity. Malaria disease is one of the priorities eradication of infectious diseases become an integral part of the development of the health. Infectious disease, which is spread through mosquito bites Anopheles and can attack all age group.

More than half the world's population lives in malaria-endemic areas. In developing countries, including Indonesia, malaria has caused losses, for example causing many victims, medical care costs, and job losses.

Three main factors are interconnected with the spread of malaria, namely the host (human/mosquito), agent (Plasmodium parasite), and environment (environment). As host intermediate, humans can be infected by the agent and is a breeding ground for the agent. Mosquitoes as the definitive host determine malaria transmission, while environmental factors enough to influence, among others, the physical environment, chemical environment, biological environment, socio-economic and cultural environment. (Gunawan, 2000)

In Blum's framework of health status, it states that the factors that influence health status are: Public health consists of behavior, environment, heredity, and health services. Where Behavioral and environmental factors have a large enough role compared to hereditand health services. (Notoadmodjo, 2003)

The high transmission of malaria in the working area of the Aji Kuning Health Center cannot be separated from behavior community related to environmental health behavior. 423's behavior is influenced by knowledge and a person's attitude towards an object. Knowledge of one's malaria can affect their behavior in preventing malaria transmission. Likewise with attitude, even though it does not always indicate a relationship.

Community actions related to malaria transmission and prevention include the use of: mosquito nets at night and use of mosquito repellent to avoid mosquito bites, the habit of going out at night, the use of wire netting on the ventilation of the house, clean the surrounding environment from puddles, and don't hang cloth/clothes inside the house.

II. Review of Literature

2.1 Behavior

Cognitive theory (ability to think / intellectual) says that the formation of human behavior is a cognitive response to stimuli, such as observations, knowledge, ideas, or beliefs. In the formation of behavior, humans play an active role in achieving their goals so that humans themselves determine the direction of their behavior. The formation of behavior is the result of the response of the stimulus-stimulus function of the organism in question (Herri Zan Pieter, 2011)

Behavior is an activity or activity of the organism (living thing) concerned. Therefore, from a biological point of view, all living things from plants, animals to humans behave, because they have their activities. From this description, it can be concluded that what is meant by human behavior is all human activities or activities, both those that can be observed directly and those that cannot be observed by outsiders (Notoatmodjo, 2012).

Factors that distinguish responses to different stimuli are called behavioral determinants, namely internal determinants or factors, namely the characteristics of the person concerned, which are given or innate, such as intelligence level, emotional level, gender, and so on, external determinants or factors, namely the environment. , whether the physical environment, social, cultural, economic, political, and so on. Thus, it can be formulated that behavior is the totality of one's appreciation and activity which is a joint or resultant result between various factors, both internal and external factors (Notoatmodjo, 2012).

Research by Rogers (1983), reveals that before people adopt a behavior, within the person, there are 5 stages, namely:

a. Knowledge, that is, the person knows and understands that there will be new changes.
b. Persuasion is the process of guiding oneself or others towards the adoption of ideas, attitudes, or actions rationally and symbolically.
c. Decision (Decision), ie people begin to choose to adopt or reject the change.
d. Implementation, people begin to implement these changes within themselves.
e. Confirmation, the person seeks reaffirmation of the changes that have been implemented and may change his decision if the changes are contrary to what he wants.

However, from further research, Rogers concluded that behavior change does not always go through these stages. If the recipient of a new behavior change or behavior adoption through a process like this is based on knowledge, awareness, and a positive attitude, then the behavior is not based on knowledge and awareness so it will not last long.

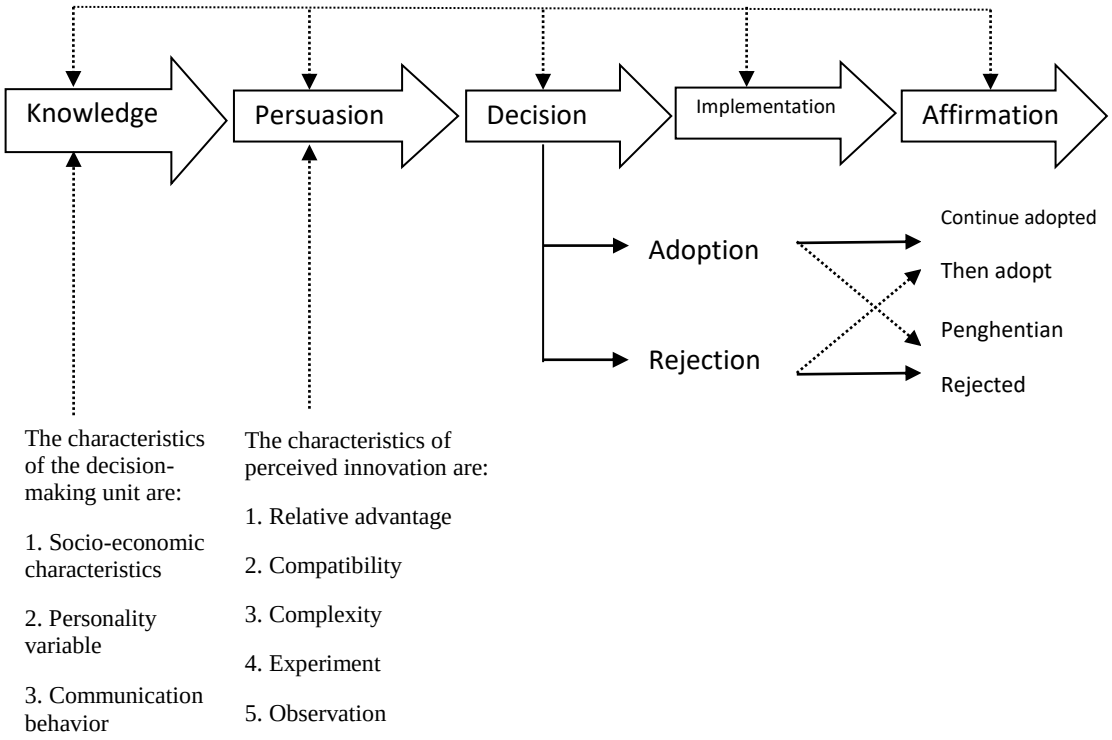

Figure 1. *Flow Chart Comunicated*

Human behavior is the result of all kinds of experiences and human interactions with their environment which are manifested in the form of knowledge, attitudes, and actions. In other words, behavior is a response/reaction of an individual to a stimulus that comes from outside or from within himself. This response can be passive (without action: think, think, act) or active (take action). By this limitation, health behavior can be formulated as all forms of experiences and interactions of individuals with their environment, especially regarding their knowledge, attitudes, and actions related to health.

Lawrence Green's theory in (Herri Zan Pieter, 2011) says that the health of a person or society is influenced by behavioral factors within oneself (behavior causes) and behavior outside oneself (non-behavior causes).

2.2 Knowledge

Knowledge is the result of knowing after people have sensed a certain object. Sensing occurs through the five human senses, namely: sight, smell, taste, and touch. Most of the human knowledge is obtained through the eyes and ears. Knowledge is a very important domain for the formation of one's actions (overt behavior) (Notoatmodjo, 2012). Knowledge is an individual's ability to memorize, remember, define, or identify certain information, such as facts, rules, principles, conditions, and requirements presented during health education. For example, for the topic of malaria, at this stage, the community is expected to be able to state the definition of malaria and how to prevent malaria (Rika, 2010). According to Indrawati et al (2021) Knowledge plays an important role in people's lives. The concept of values which is based on the way of human action is stored in the framework of knowledge.

2.3 Malaria

Malaria disease was originally known as a disease due to bad air (mal: bad; aria: air), so this disease often occurs in swampy areas, because many people in coastal areas suffer from symptoms of malaria, namely high fever, chills, and sweating (Aris, 2013).

Genetic research suggests that modern plasmodium that is infective to humans occurred 7000 years ago, namely when humans began to develop agriculture in Africa, which then changed the ecology of forests into agricultural land, so that humans interacted with mosquitoes whose habitat had changed, from here genetic mutations began. infective ability (Aris, 2013).

Malaria has been known after the Greeks, originally from the African continent, thirty million years old fossils of malaria-carrying mosquitoes were found there. Mosquitoes cause malaria in hot climates around the world. Malaria is an infectious disease caused by Plasmodium that enters the human body and is transmitted by female Anopheles mosquitoes (WHO, 2009).

The clinical course of malaria is typical and easily recognizable because of the fever that goes up and down and is regularly accompanied by chills, so at that time it was known as tersiana febrile and quartan fever. Besides that, there are abnormalities in the spleen which are enlarged and harder, people are more familiar with malaria with tortoise fever.

Malaria is a disease caused by parasites (protozoa) of the genus Plasmodium which can be transmitted through the bite of the Anopheles mosquito (Prabowo, 2004). Malaria has been known since 3000 years ago. A scientist Hippocrates (400-377 BC) has distinguished the types of malaria. Alphonse Laveran (1880) found Plasmodium as the cause of malaria, and Ross (1897) found that the malaria agent was the Anopheles mosquito (Widoyono, 2008). Malaria is an infectious disease caused by Plasmodium that enters the human body and is transmitted by female Anopheles mosquitoes (WHO, 2009).

2.4 Plasmodium Life Cycle

Plasmodium will undergo two cycles. The asexual cycle (schizogony) occurs in the human body, while the sexual cycle (sporogony) occurs in mosquitoes. The sexual cycle begins with the union of male and female gametes (9) to form ookinetes (10) in the mosquito's stomach. Ookinet will penetrate the stomach wall to form cysts on the outer membrane of the mosquito stomach (11). The time required for this process is 8-35 days, depending on the environmental situation and the type of parasite. In this place, the cyst will form thousands of sporozoites which are released and then spread throughout the mosquito's organs, including the mosquito's salivary glands. It is in this gland that the sporozoites mature and are ready to be transmitted when a mosquito bites a human (Widoyono, 2008).

Humans who are bitten by an infective mosquito

(1) Will experience symptoms according to the number of sporozoites, plasmodium quality, and body resistance. Sporozoites will start the exoerythrocytic stage by entering liver cells
(2) In the liver, the sporozoites mature into schizonts
(3) Which will rupture
(4) and release tissue merozoites
(5) Merozoites will enter the bloodstream and infect erythrocytes to start the erythrocyte cycle. Merozoites in erythrocytes will undergo morphological changes, namely: merozoites-ring-forming trophozoites-merozoites.

(6) This change process takes 2-3 days. Some of these merozoites will develop to form gametocytes to re-start the sexual cycle into microgametes (males) and macrogametes (females)
(7) Infected erythrocytes usually rupture which manifests in clinical symptoms. If a mosquito bites an infected human, the gametocytes in the human blood will be sucked in by the mosquito. Thus, the sexual cycle in mosquitoes begins, and so on the transmission of malaria (Widoyono, 2008).

2.5. Theoretical Framework

The theoretical framework in this study is summarized based on a review of existing theories, especially regarding the relationship between one risk factor and other risk factors that influence the occurrence of malaria.

The risk factors that influence the occurrence of malaria are maternal characteristics (including age, gender, ethnicity), physical environmental factors outside the home and inside the house include: distance from house to breeding place, temperature, sunlight, humidity, lighting, resting areas, puddles, house walls, ventilation, use of wire netting and house floors) biological environmental factors (including the presence of animal cages), socio-economic factors (including employment, education, income/income), behavioral factors (including knowledge, attitudes, and actions), health service factors (including counseling, spraying, treatment), and other factors (including vectors, immunity, nutritional status, mosquito density, and wind).

III. Research Methods

3.1. Types of Research

The type of research used is an observational analytic study with a case-control design. Case-control research is an observational analytic type of research conducted by comparing the case group and control group based on their exposure status. It moves from effect (disease) to cause (exposure). Case-control research can be used to find out how far the risk factors influence the occurrence of a disease. That is to see how far the relationship between environmental and behavioral factors influence the occurrence of malaria in children under five.

3.2. Validity and Reliability Test

a. Validity Test

The validity test of the questionnaire as a data collection instrument was carried out before the research was carried out. Validity is used to measure the validity or validity of a question item. The validity test uses the Pearson product-moment correlation, with a test decision if r count (r Pearson) r table means the question is valid, and if r count (r Pearson) < r table means the question is invalid.

b. Reliability Test

Before the questionnaire was used as a data collection tool, the instrument was tested to measure the validity and reliability of the data collection tool. Reliability shows the level of consistency and stability of the data in the form of a perception score of a variable, both independent and dependent variables. Thus the reliability includes the stability of the measure and the internal consistency of the measure. Measure stability indicates the ability of a measure to remain stable or not susceptible to changes in any

situation when two or more measurements are made of the same symptom, using the same measuring instrument.

The test results for the validity test were measured using the Pearson Product Moment correlation formula. According to Sugiyono (2005), the questionnaire will be said to be valid if r count > r table where r table = 0.444. To test the reliability of the instrument used by using the Cronbach's alpha method. According to Sugiyono (2005), a question item will be said to be reliable if it has a Cronbach's Alpha value above 0.68.

IV. Results and Discussion

4.1. Geography

Geographically, Bukit Malintang District is located in the lowlands and part of the swamp, with an area of ± 12,743.52 (Ha). The altitude of the Malintang sub-district above sea level is 250-600 meters.\

Bukit Malintang sub-district is bordered by:

a. To the north it is bordered by Siabu District.
b. To the south is bordered by the territory of the Fighting Dragon
c. In the west, it is bordered by the South Tapanuli region
d. In the east, it is bordered by the South Tapanuli sub-district.

Health facilities in the working area of the Malintang Health Center:

a. Public health center

In its development, from year to year efforts are made to continue to improve its services with the aim that health services can be affordable by the community and evenly distributed to the working area of the Malintang Health Center.

The existence of 1 Nursing Health Center supported by the availability of 7 Polindes and 11 Village Midwives residing in the village is expected to have a good influence on health services to the community.

b. Community Resourced Health Facilities

To increase the coverage of health services to the community, various efforts are made by utilizing the potential and resources that exist in the community. Community-Based Health Efforts (UKBM) include Posyandu, Polindes.

Posyandu is one of the most well-known forms of UKBM in the community. Posyandu organizes at least five priority programs, namely Maternal and Child Health, Family Planning, Nutrition Improvement, Immunization, and Diarrhea Management.

To monitor its development, Posyandu are grouped into four strata, namely Pratama Posyandu, Madya Posyandu, Purnama Posyandu, Mandiri Posyandu. Based on the strata grouping above, in 2013 there were 20 Primary Posyandu and 2 Madya Posyandu in the working area of the Siabu Health Center.

c. Village Health Post

One of the criteria for an alert village is to have at least one Poskesdes. Poskesdes personnel are at least one midwife and two cadres. And all villages in the working area of the Siabu Health Center have become alert villages.

4.2. Multivariate Analysis

The multivariate analysis in this study was intended to see the relationship of the independent variable to the dependent and at the same time to see the most dominant variable from the independent variable to the dependent with the consideration that in bivariate analysis (chi-square test) there was a variable that had a value ($p < 0.05$).

In this study, nine variables were thought to be related to the incidence of malaria in pregnant women, namely work, wire netting on ventilation, wall density, puddles, ditches, rice fields, knowledge, attitudes, and actions.

The first stage in multivariate analysis is to determine candidate variables that meet the requirements of the multivariate test, namely variables with p-value < 0.025.
The following are variables that are candidates for the multivariate test:

Table 1. Analysis Results that Meet the Multivariate Assumptions (Candidate)

Variabel	P
Work	0,001
Knowledge	0,005
Attitude	0,011
Action	0,001
Wire mesh on ventilation	0,003
Wall density	0,001
Puddle	0,003
Ricefield	0,003

Multivariate analysis aims to obtain the best model in determining the dominant variables associated with the incidence of malaria in pregnant women. Variables that have a probability value (p) less than 0.25 are the variable wire netting on ventilation, wall density, work and knowledge. In this modeling all variables that have a p value> 0.25 will be excluded gradually (backward selection) as in the following table 2:

Table 2. Value analyze multivariate

Variable	B	P	Exp(B)	95% CI for Exp (B)	
				Lower	Upper
Wire mesh on ventilation	-1,560	0,003	0,210	0,74	0,594
Wall Density	1,490	0,004	4,436	1,597	12,327
Work	1,105	0,037	3,018	1,068	8,533
Knowledge	-1,094	0,058	0,58	0,108	1,040

After identifying the significant variables, further testing is carried out together with the enter method to identify the most dominant related factors. Furthermore, all these variables with the Backward LR method are entered together then the variables with p value> 0.05 will be automatically removed from the computer so that the influential variables can be found. Variables selected in the final multiple logistic regression model

The description of each independent variable and its relationship with the dependent variable has been tested and analyzed by univariate, bivariate and multivariate. The independent variable (independent variable) consists of the physical environment of the house (wire mesh on ventilation and wall density), the physical environment of mosquito breeding places (distance of puddles, ditches, rice fields) and characteristic variables (occupation) and behavior (knowledge, attitudes and actions). , and the dependent variable, namely the incidence of malaria in pregnant women.

Based on the distribution of the wire netting on the ventilation of the physical environment of the house in the case and control group, namely in the case group, the physical environment of the house with wire netting on ventilation did not meet the

requirements of 68.9% and in the control group there was more physical environment of the house with wire netting on ventilation. meet the requirements of 62.2%.

The distribution of house wall density in the case and control groups, namely in the case of the house wall density more fulfilling the requirements by 68.9% and in the control group more house wall density fulfilling the requirements by 62.2%..

V. Conclusion

The results of this study showed that 60.0% of cases had bad behavior about malaria. The results of the chi-square test showed that there was a significant effect between the action and the incidence of malaria with $p<0.05$; OR = 7.618 (95% CI: (2.878-20.160), and based on multivariate analysis that there was no effect of an action on the incidence of malaria $p>0.05$.

From the analysis of researchers at the research location, the respondent's actions were not caused by several factors, including the lack of awareness and willingness of mothers to take malaria prevention and treatment even though they already know a lot about how to prevent it, the lack of mother's attention to her children and others. other. In line with the research by Sarumpaet and Tarigan (2006) in the Leuser Ecosystem Area, Karo Regency, North Sumatra Province that malaria sufferers are at greater risk with less treatment than those who do not suffer from malaria, and the adjusted OR value = 6.9 (95% CI: 3.2 -14,8), in the Leuser Ecosystem, Karo Regency, based on available data, the mosquito species are Anopheles barbirostris and Anopheles balabacensis. Anopheles barbirostris prefers human blood and can bite indoors and outdoors. Likewise, in general, Anopheles spp. mosquitoes are actively looking for blood at night and start biting at dusk until midnight and sometimes until early morning. This condition allows the risk of contracting malaria not only inside the house, but also outside the house. Preventive measures in the form of making mosquito netting, using mosquito nets, using repellents and eradicating mosquito nests whose proportions are significantly lower, in this case, should be pursued. Thus, efforts that can be made in eradicating malaria must be integrated and advocated by regulations. For this reason, it is better to stipulate/make a regional regulation that can involve all communities, related agencies continuously and sustainably, both across sectors and across programs between the Karo District Health Office and other agencies to clean every home environment that can become a breeding ground for malaria-spreading mosquitoes.

Prevention for families/households can be recommended to cover the ventilation with wire netting and use mosquito nets on the bed. With the canonization, it is hoped that families living in the house can be protected from malaria mosquito bites. The use of mosquito coils is also necessary when sleeping or gathering inside/outside the house. Mosquito coils are useful for repelling and killing mosquitoes that transmit malaria so that the incidence of malaria can be reduced.

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