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Health Care Practice among People with Malaria in
Sub-District Topoyo, West Sulawesi Province

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Abstract: This article discusses health care practice among people with malaria in Sub-district Topoyo, in West Sulawesi Province. The data collected from fieldworks using qualitative methods. Findings shows that although the government have provided professional health facilities and taken various measures to encourage active participation of the people in malaria elimination on the basis of biomedicine perspective, the people continue to practice various kinds of health care, and even mixing health care elements from scientific and local medicine.

Keywords: malaria, health care practice, scientific medicine, local medicine, mixing

1. Introduction`

Malaria is a parasite infection disease that infected human being since prehistoric era (Cockburn 1977; Wita Pribadi 1993), but it continues to be one of the public health problems in world (Cahill, 2004; Coreil 2004) include of Indonesia. Basic Health research 2013 di Indonesia shows that malaria has the third highest prevalence for infectious disease, below upper respiratory tract infection and diarrhea: 25%, 7.0%, and 6.0% respectively (Kementerian Kesehatan RI [Indonesian Health Ministry], 2013). In addition, malaria becomes the sixth cause of death in Indonesia (Kementerian Kesehatan RI, 2010).

The province of West Sulawesi is one of the malaria endemic areas in Indonesia. Annual Malaria Incidence (AMI) in 2011, it reached 5.9 per 100 (Dinas Kesehatan Sulbar [West Sulawesi Health Office] 2011). On the same year, in the District of Mamuju, which includes the District of Mamuju Tengah, medical record of Mamuju Public Hospital shows that malaria became the fourth among six highest cases being treated in the hospital, as much as 105 cases (Dinas Kesehatan Sulbar 2011).

Malaria is not only contribute to high mortality rate, especially among the pregnant women, babies and under five children, but can also lower human quality (Syafruddin et.al, 2012; Pell et.al 2013). A pregnant woman with malaria can experience maternal anemia, premature delivery, and even stillbirth (McGregor, 1984). Babies born prematurely tend to develop physically and mentally slow. Similarly, malaria infection in a growing child tends to disrupt physical and mental development, and even leads to retardation. Economically, it causes poorer productivity and increase medical costs. In Indonesia, with malaria infection reach 3 million reported cases, it can cause high expenditure of the state budget (Kementerian Kesehatan RI, 2010: v).

The effect of malaria is so high that Indonesian government devises a specific program to eliminate malaria (Kementerian Kesehatan RI, 2010). The aim of a promotion program to eliminate malaria is to transform health care practices from those based on local knowledge to the ones based on scientific medical tradition (see Dachlan dkk. 2012; M. Idrus 2013; Ester dkk. 2012; Ningsih dkk, 2011). In addition, the government provides infrastructures and facilities to sub-district level to detect and cure malaria infection.

As with the health promotion program as well as infrastructures and facilities to eliminate malaria, it is assumed that people with malaria indications will practice health care that uses the professional medical healthcare. Based on the assumption, this article examines the healthcare practices by people with malaria indications in the Sub-District of Topoyo, West Sulawesi Province.

2. Methods

The research use qualitative approach, carried out in Sub-District of Topoyo, located in the District of Central Mamuju. The location selected for its highest distribution and prevalence of malaria infection in 2012 among all sub-district within the district, as high as 99 cases (BPS Kabupaten Mamuju Tengah [Central Mamuju Statistic Office] 2013). Informants established purposively, people that were currently (at the time of the fieldwork) or have been infected by malaria. Primary data collected by participant observation and in-depth interview. Data analyses follows interactive model (Miles & Huberman 1992), with three steps: data reduction, data presentation, and conclusion making.

3. Results and Discussion

Sub-District Topoyo as Malaria Endemic

Sub-District Topoyo extends 869,89 km square, with Makassar Strait to the west; Sub-district Budong-Budong and Tobadak to the south; District North Luwu (South Sulawesi Province) to the east; and Sub District Karossa to the north. Topoyo located at 2° 04' 05" S and 119° 17' 07" E, comprised of coastal area, narrow inland plain and low hills up to 500 m above sea level. Of the coastal plain, around 212 ha covered by mangrove and approximately 2.071 ha by fish ponds. On the plain and hills there are forests, and 5.867 ha of cultivated area, 14 ha of wet rice fields, and the rest is settlement and unproductive areas covered by bushes. The Mangrove, ponds, and rice field areas become breeding sites of anopheles mosquitoes, the malaria vector. Meanwhile, the forested and bush covered areas that are not directly hit by sunlight become the resting sites for the anopheles.

Anopheles mosquito in Central Mamuju District, based on a survey carried out by an entomologist team of Hasanuddin University in 2012, comprised of four species for mature stadium: *Anopheles subpictus*, *Anopheles barbirostris*, *Anopheles indefinitus* and *Anopheles Umbrosus*. (Syafuruddin et. al. 2012).

Average annual temperature in Central Mamuju is at 27,58 degree Celsius, while monthly minimum temperature occur in July, with 24,3 degree Celsius, and the maximum arrives in October with 37,3 degree Celcius. Annual average moisture is 79,08% with monthly minimum is at 75%, take place in September, and its maximum is occur in February at 82,1%. This kind of temperature and moisture is an ideal mix to the live of the anopheles. The species breeds at the temperature of 20-30 degree Celcius. Although they can survive below or above this ideal range, their metabolism processes decrease, and even stopped at the temperature less than 10 degree Celcius or more than 40 degree Celcius (Indonesian Health Department 1999). Similarly, the moisture rate of below 60% shortens the live of the mosquitoes that limit the time for the growth of plasmodium parasite in their bodies.

Rainfall. Rainy season begins in October with the rate of rainfall at 200 mm³ and rises in November and December to 387 mm³ and 380 mm³ respectively. Into January, the rainfall decreases to 125 mm³ and make a drastic jump with intensity during February that reach 567 mm³ within only 10 rainy days. From March to August the rainfall declines to 120 mm³ or less. The lowest rainfall volume ensues in September at 70 mm³ within five rainy days. Annual rainfall rate is 384 mm³ (BPS Mamuju Tengah 2013). This relatively high rainfall allow for the creation of puddles as breeding sites for the anopheles.

Demography. In 2013, the population of Sub-District Topoyo reached 28.056 (BPS Kecamatan Topoyo, 2014). In 2012 its population was 27.537, meaning that within one year Topoyo witness a 519 population rise. This cannot merely be attributed to the number of births, but also to the fact that

Topoyo is a destination for migrants seeking for job, indicating high mobility of people going in and out. This mobility contributes to malaria incidence. On one hand, individuals come from a non-endemic area have not acquire immunity towards plasmodium parasite hence vulnerable to malaria infection. According to Nugroho (in Hidayat 2010) an individual immunity to malaria only built after two years living in a malaria endemic area (p. 27). On the other hand, individuals from other malaria endemic areas can be infected from their area of origin and may become a source of infection to other people in their destination area. Moreover, high mobility allows a malaria free area to become an endemic area (Susanna in Suarni 2014: 56).

Other aspect contribute to malaria transmission is the type of occupation adopted by the local population. In Topoyo, the type of jobs that are vulnerable to malaria infection are: (1) collecting rattan and logging in the forests, both under logging companies holding legal rights (HPH) and illegal logging. They normally carry out their jobs during night time; (2) wet and dry land farmers, who are also normally be around their field during the night, and (3) fishers, also typically sail at night.

Settlement and housing type. The resident of Topoyo settles in groups and extending by either side of the road. The houses typically semi-permanent: their walls are not sealed and ventilations are not guarded by wire netting, hence the anopheles can easily come into the houses. Irma Muslimin suggest that people who settled in well covered houses are in risk being infected with malaria as much as 8,9 times (Irma Muslimin in Suarni 2014: 43).

Logging activities in the forested area, both for opening farmland and to harvest woods were not only disrupts the ecosystem balance but also contribute to the local people vulnerability to malaria infection. Wet patches left by truck wheels operated for logging companies to transport logs from deforested areas constantly filled by water during rainy seasons, creating breeding spots for mosquitoes. Some types of anopheles reproduce rapidly in sunlit water bodies (see Foster dan Anderson 1986:22; Depkes 1883:16-17). This condition is absent when the area was still covered by forest: puddles covered by forest canopies do not get direct sunlight. In other words, deforestation can increase anopheles population.

Moreover, deforestation reduces the number of animals that was became food sources for *zoonthropofilik* anopheles—type of anopheles mosquitoes that consume bloods of animals and human—in the forest. The animals move to other places when their natural habitat disrupted and left the anopheles looking for alternative source of food in human settlements. In other words, human being and domesticated animals become the main sources of blood for anopheles. This description confirmed by a trans-migrant from District of Pinrang, Province of South Sulawesi, now lives in Village of Topoyo, in the Sub-District of Topoyo:

"in the early months we settled here, at the end of 1985 [or] early 1986, the mosquitoes were incredible. In the evening the mosquitoes attacked like angry bees after something annoying their hives. The mosquitoes were too much that we often chat inside the mosquito net and even we often eat inside mosquito net. ... Horses brought by people from Polmas as means of transportation were not last long. They died after writhing all night long in their stables; they suffer from too many mosquito bites."

The same informant recalled how malaria infected the population:

"... then, we, the trans-migrants, were given medicines by the government and we took them a week before we arrived here (Topoyo). After then, each week a government staff distributed medicines to us and we took them immediately. The medicines were effective because as far as I can remember no trans-migrant was infected with malaria. This was different from those who were not coming as a participant of the transmigration program, they did not get the same medicines, and some of them get sick, fever-and-cold, some of which go back to their original places and never came back."

Health infrastructure and facilities. Modern infrastructure and facilities are available in Topoyo: two *Puskesmas* [public health center in sub-district level], 15 *Poskesdes* [public health center in village level], and three private clinics. The *Puskesmases* have laboratory and trained nurses who can use microscopes to identify plasmodium parasite. *Poskesdes* have Rapid Diagnostic Test (RDT) tools that can identify the parasite and a trained nurse that can use the tools to establish whether a person with malaria symptoms is indeed infected with malaria. Topoyo have two drugstores that sell various kinds of anti-malaria medicines such as: *Chloroquin*, *Reboquin*, *Mexaquin*, and *Suldox*. These medicines can be purchased without doctor's recipes and generally consumed by local people when experiencing symptoms that is perceived as malaria (see Dachlan et. al. 2012).

Transportation infrastructure and facilities. The road connecting villages within Topoyo partly mostly covered with rocks or soil. Roads covered with rocks and soil are passable by motorized vehicle during dry season, but during such time the passing motorbikes or cars causes dust to fly into houses that are built on either side of the roads. This condition contributes to some extent to the high incidence of lower upper respiratory tract infection across the whole district. Meanwhile during the rainy season the unpaved road are nearly impassable, they are slippery and create deep and wide puddles in some spots. This road condition cause the unavailability of public transportation that can reach groups of settlements, affecting decision of people with illness symptoms, including malaria, to use professional health care facilities.

4. Medical Pluralism and Health Care Patterns

Medical pluralism is the availability and use of different sources or sectors of health care within a community (see Baer 2004; Kalangie 1994). Medical pluralism model generally refer to a theory developed by Kleinman on medical

systems he calls health care systems. Kleinman (1980) in his book *Patients and Healers in the Context of Culture* stated that "the health care system includes people's belief (largely tacit and unaware of the system as a whole and patterns of behavior. Those Beliefs and behaviors are governed by cultural rules" (Kleinman 1980:26). Moreover, Kleinman suggest that in a relatively complex social unit there are three sectors of medical systems: "1) the popular sector, 2) the folk or traditional sector, and 3) the professional sector."

The Topoyo residents have prevention and care techniques for people with malaria indication passed down from generation to generation, and have exposed to information on malaria prevention and care techniques from scientific medical tradition. To date, scientific medical tradition is being massively and intensively installed to the whole Province of West Sulawesi through health promotion program to eliminate malaria.

Exposure and availability of scientific and local medical tradition, each come from different assumptions and even contradict in terms of health and disease, affecting the responses of communities toward malaria. The communities' responses can be explained using medical pluralism model.

1) Popular Health care Sector as the Main Choice

Public health care sector is the sector where treatment done by the people without assistance or intervention from local and professional medical practices. The popular sectors including self-treatment and home remedy (treatment done by family members—all of which are unfamiliar with health problems and treatments).

In terms of treatment for malaria, popular sector is the most widely practiced, illustrated in the statement of program personnel of malaria elimination in Puskesmas Topoyo:

"One of the main obstacles to the success of the malaria elimination program here is that the people generally tend to practice self-treatment or home remedy without the involvement of health professional workers when experiencing symptoms indicating malaria infection. They only come to *Pustu/Poskesdes* or *Puskesmas* when the symptoms become severe. Whereas a treatment against malaria can only be successful if all people with malaria indications come earlier directly to a health center to identify the diseases they are infected with and get immediate care if they are malaria positive. But if they delay to come to *Pustu* or *Puskesmas* and positively infected with malaria, most likely they have become the source of infection to uninfected people around them. It happens when they think they are cured (the symptoms are gone) after a self-treatment, but if their blood cells examined most likely we can find plasmodium parasite. And so if their blood sucked by the anopheles, the plasmodium parasite will be transmitted to the mosquito bodies; and then the mosquitoes will transmit the parasite to other people..."

This fact similar to what recorded by several studies in different countries that popular sector used most widely, around 70-80% (Kleinman 1980; Helman 1986; and Kalangie 1994).

Although the people indicated with malaria infection generally practice self-treatment or home remedy as the main health care sector, the kinds of health care are mixed. Below we present four cases of people with malaria indications who practice self-treatment and home remedy without involvement of local professional medical worker using diverse kinds of medicine.

Case 1. Treatment with Medicinal Herbs

AS was a 42 years old man, work as a farmer, and have finished high school. Six month ago he experienced shiver, high fever, and headache recurrently. The fever and headache subsided after heavy sweat. But after one day the same symptoms resumed, indicated that AS was infected with *plasmodium vivax* parasites.

He reduced his workload and consumes of medicinal herbs (*bagore* [*Caesalpinia crista*] and *balayan kurita* [*tinospora crista*]). He recalled that after five consecutive days consuming the medicinal herbs, he feels cured – shiver, fever and headache were gone.

Case 2. Treatment with 'doctors' medicine

KM was a 37 years old man, a farmer with high school diploma. He experienced shiver and high fever; he consumes chloroquin and riboquin he bought in local drugstore without doctor's recipes. He consumed them as 'doctors medicine'. Every day after breakfast he took 3 chloroquin tablets and 2 riboquin tablets at once. After three consecutive days consuming the medicines, the symptoms were gone. He no longer experienced shiver and fever.

Case 3. Consume Snake Liver

MN was a 27 years old man, helped his brother working in the marketplace in Topoyo and even other markets across the District of Central Mamuju. Three months before the interview he experienced shiver, high fever and headache. The headache and fever receded after heavy perspiration. But every night at 8 pm the symptoms resumed.

On the first and second day he consumed bodrex and mexaquin tablets which can be purchased in stores without doctors recipes. On the third night, his brother gave him two python dried livers and he consumed them in two days. On the fifth night he feels recover from illness -- shiver and fever are gone.

Case 4. A Combination of local and doctor medicines

BS was 22 years old, finished high school and work casually. He experienced body shivering and high fever. The fever period were stopped after sweating, but the next the same symptoms resume, indicated the infection of *plasmodium falciparum* parasites.

To deal with his illness he drank water stew from *balayan kurita* (*Tinospora crista*) and chloroquin. He took 3 chloroquin tablets at once, every day for three consecutive days. According to him the combination of these medicines can cure him and never infected with malaria again. He got

the information on this mixed treatment from his friend who has experienced malaria infection.

The cases presented above suggest that the populace of Sub-District Topoyo practicing popular healthcare sector as their main choice consume varied types of medicines. Parts of them depend on medicinal plants as their main choice and others consume "doctor's medicine" or chemical medicines and animal parts, and combination diverse types of medicine. The consumption of various type of medicine refers to previous experiences and information they gathered from people around them.

2) Professional Health care Sector as the Main Choice

Of five informants treated in the Puskesmas Topoyo for malaria infection, only two of them directly brought to the professional health service when showing malaria infection indications. The other three practice self-treatment initially before come to health center. They are as follows:

First, HB a boy, 12 years old, experienced fever and shiver. When early malaria indications seen his mother immediately fetch her relative who work in Pustu [village clinic] to check on the boy. Arriving at the house, the nurse examined his blood (hemoglobin) using RDT tool and found that the boy infected with malaria. Thus, the nurse decided that the boy brought to *Puskesmas* Topoyo for three days intensive care.

Second, SR a nine years old boy, live in Village Tumbu, has been opname in Puskesmas Topoyo for malaria. When SR experienced early indication of fever-shiver, his aunt who was a cadre in the Village Malaria Post (*Pos Malaria Desa* [*Polmades*]) directly took him to *Pustu* Tumbu. His blood examined by a nurse using RDT tool and found he was indeed infected with malaria. At the same day, he was sent to *Puskesmas* Topoyo, accompanied by her aunt, for further treatment.

It seems that the populaces who are directly go to professional healthcare sector to get treatment when showing early signs of malaria infection are having relatively close relation to health workers or cadre in *Polmades*. It confirms what was stated by NR, a laboratory assistant in *Puskesmas* Topoyo, that:

"... people who usually go directly to Pustu/Poskesdes or this Puskesmas when experiencing early signs of malaria infection are those that have relatives working as nurse or malaria cadre in the village. While the rest of them practicing self-treatment and even visit healers."

3) Traditional Medics Sector as The Main Choice

Today, traditional treatment sector are rarely used as the main and first choice. Traditional sector tend to be used after unsuccessful efforts with bio-medic treatment.

When experience illness with malaria indications those who go directly to traditional sector to get help generally have kinship/family relation and live close or at the same house with traditional healer. When they experience symptoms the healer function as first aid. However, when this first treatment shows undesirable result (does not get better or even become more severe), the patient will be brought to professional sector to seek for health care.

AN, a *sando* lives with his grandson in Village of Tumbu and practice health care with medicinal herbs with spell (*jampi-jampi*), stated that he does the first treatment for his sick family/kin members. But if it fails to show positive result after several days, he will suggest to send the patient to a hospital or health center, even bring he bring the patient himself.

4) Hierarchical Use of Different Sectors

As mentioned, the first measure practiced by general populace when experience illness, including indications of malaria infection, is self-treatment or home remedy without the involvement professional health workers. When home remedy or popular sectors fail to show positive result, the patient and his/her family decide to seek for the next health care sector, professional or traditional sectors.

Two cases below illustrate the use of health care sectors hierarchically related to indication of malaria infection.

Case 1

“WT, a 19 years old girl live with her grandmother in Village of Tumbu. Right before magrib (at dusk) she began to feel cold and soon after shiver. After this cold period, her body’s temperature drastically rose accompanied with headache and stopped after a heavy sweat, after which she felt exhausted. She treated these symptoms with bodrex and parasetamol tablets she bought from a store close to her house. But she was not getting better with the medicines, the same symptoms resumed every day at the same time.

To deal with this the grandmother visited a *sando* (traditional healer) and told her about the symptoms experienced by her granddaughter. The *sando* made medicinal herbs *alibe pitungrupa* comprised of: papaya leaves, turmeric, *buah Mengkudu (Morinda citrifolia)*, and *parratukang* (guava). The medicinal herbs consumed by the patient for two days but the symptoms were not receded and even become worse. The symptoms were not only shiver and high fever but also nauseate and fomite. The grandmother then visited the nurse in *Pustu Tumbu*, who then come to the patient’s house and made basic examination. After the examination the nurse sent the patient to Health Centers of Topoyo where her blood were examined and found that she was indeed infected by malaria. It was decided that WT get intensive care in the Health Center until she was recovery from disease.”

Case 2

RL, a 24 years old man and live with his parents in Village of Tumbu. Before then he worked as a palm oil plantation worker in Kalimantan where he got sick with shiver and high fever. For days he did nothing about the symptoms, but because he felt that his illness is getting worse he decided to go home. In Tumbu for several days he was given medicinal herbs *bagore (Caesalpinia crista)* and stew water of *langsar* (yellow fruits) rind, but the symptoms persist. When RL experienced shiver and high fever together with spasm, his parents took him to *Poskesdes* (village clinic) Tumbu, where he was immediately referred to *Puskesmas* Topoyo. RL stay for several days intensive care in the *Puskesmas* until it was established based on microscope examination that plasmodium parasite in his blood was eliminated.

Despite the fact that *Puskesmas* had established that malaria has gone in RL’s blood, his parents considered that their son was not totally well—he was still sick. After days in *Puskesmas* RL was

become quiet and less responsive. Before then he was a happy and conversational boy.

According to health worker who referred him to *Puskesmas* Topoyo, “it was too late to bring RL to the health clinic that he experienced **complication**. His infection has got to his brain; it became cerebral malaria, which can cause neural disorder although plasmodium parasite has been eliminated from his body.”

Because RL’s parents thought that he was still sick, until the time of the fieldwork the parents regularly visit *tomanarang* (faith healer) who they think can cure RL from his sickness.

The cases presented above show that the people tend not to strictly separate between the illness that can be cured by and through scientific medical tradition from those that can be cured by local tradition. Instead, the healthcare practiced by using both traditions hierarchically.

5. Conclusion

Health promotion program to eliminate malaria has been carried out massively and intensively by Health Office of the District of Central Mamuju, especially in Sub-District of Topoyo. However, people with indications of malaria infection are using varied health care sectors with different treatment techniques. The variation is as follows:

- 1) Malaria patients or person with malaria indication who use popular health care sector used by consuming varied type of medicine, such as: a) medicinal herbs; b) animal parts; c) chemical medicines or ‘doctor’s medicines’; and d) combination all diverse type of medicines.
- 2) Malaria indicated persons or patients who use professional health care sector when experience early indication of malaria infection.
- 3) Malaria indicated persons or patients who directly seek for care to traditional health care sector.
- 4) Malaria indicated persons or patients who different healthcare sectors hierarchically

The variation of healthcare affected by previous experiences, social networks, and individual attitude of persons who make decision to use available health care sectors.

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