博士論文

The active role and limitations of malaria microscopists in Palawan, the Philippines

（フィリピン・パラワン州におけるマラリア顕微鏡検査技師の役割と限界）

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List of abbreviations

API: annual parasite index

CFI: comparative fit index

CHWs: community health workers

CMIN: chi-squared

RMSEA: root mean square error of approximation

IRS: indoor residual spraying

ITNs: Insecticide-treated nets

KLM: Kilusan Ligtas Malaria (Tagalog), [Movement Against Malaria]

P.f.: *Plasmodium falciparum*

P.k.: *Plasodium knowlesi*

P.m.: *Plasmodium malariae*

P.o.: *Plasmodium ovale*

P.v.: *Plasmodium vivax*

RBCs: red blood cells

SD: standard deviation

List of abbreviations (Cont.)

SEM: structural equation modeling

WHO: World Health Organization

Abstract

Introduction

Microscopists have an important role in Palawan, the most malaria-endemic region in the Philippines. I conducted two studies towards forming strategies to reduce malaria re-infection among ex-patients who visited microscopists in Palawan. Study 1 identified the factors associated with the implementation of community awareness-raising activities by 127 microscopists (43.8% of registered microscopists), and study 2 identified the self-implemented preventive measures against malaria among 141 ex-patients of microscopists in the year 2011(15.1% of ex-patients of 20 highly endemic villages).

Methods

Study 1: Structural equation modeling was conducted to determine associated factors in terms of microscopists' (1) place of assignment; (2) annual parasite index; (3) capacity (service quality, knowledge on malaria, and ability in malaria microscopy); (4) self-preventive measures against malaria; and (5) job satisfaction.

Study 2: Structural equation modeling was conducted in terms of ex-patients' (1) place of residence; (2) socio-demographic characteristics; (3) knowledge on malaria; (4) participation in

community awareness-raising activities for malaria prevention; and (5) satisfaction towards microscopists.

Results

Study 1 suggested that enhancement of service quality and ability in malaria microscopy are the key to strengthening community awareness-raising activities by microscopists. Study 2 suggested that these activities could be effective and have to be strengthened. These activities should be especially focused on improving the self-implemented preventive measurements among ex-patients going to the mountains, and to enhance the knowledge on malaria transmission, especially among indigenous ex-patients.

Conclusion

These findings point towards the possibility of implementing some relatively simple, low-cost interventions to boost efforts to reduce the number of malaria re-infections in Palawan.

***Keywords*:** malaria, prevention and control, patients, microscopists, community health workers, ethnicity, Palawan, the Philippines

CHAPTER 1

Introduction

1.1. Malaria

1.1.1. Biology of malaria

Malaria, which is one of the most serious parasitic infections worldwide, is caused by *Plasmodium*, a genus of the phylum Apicomplexa. It is spread by the bites of infected female *Anopheles* mosquitos [1-3]. There are more than 100 species of *Plasmodium*, but only five kinds are known to be infectious parasites in humans: *Plasmodium falciparum* (*P.f.*), *Plasmodium vivax* (*P.v.*), *Plasmodium oval* (*P.o.*), *Plasmodium malarie* (*P.m.*), and *Plasodium knowlesi* (*P.k.*) [1-7].

1.1.2. Epidemiology of malaria

With the emergence of drug-resistant parasites and vectors, malaria remains one of the world's most serious health issues [1-3,8,9]. While the burden of malaria is falling globally, the morbidity and mortality still remain high. As of 2010, there were approximately 3.3 billion people living in 99 countries who were at risk of malaria [10].

Estimates of total reported deaths are between 655,000 [10] and 1.24 million [11], with an estimated 82.69 million disability-adjusted life years lost [12]. The World Health Organization (WHO) estimated that approximately 80% of malaria cases occurred in regions of Africa and Southeast Asia, where health care services are limited [1,10]. Moreover, as has occurred repeatedly in the past, repercussions from the recent global economic crisis are also threatening malaria control [13].

1.2. Strategy against malaria in Palawan, the Philippines

1.2.1. Malaria in the Philippines

Malaria remains endemic in remote rural areas of the Philippines [1,14-29]. In 2011, approximately 75,700,000 people (80% of the national population) were living in malaria-endemic areas of the country; of these, 6,800,000 (7.2% of the national population) were living in high transmission areas [1].

The Philippines is divided into (from highest division to lowest): provinces, municipalities and component cities, and villages. Nationwide, 65 of the 78 provinces, 760 of the 1,600 municipalities and component cities, and 9,345 of the 42,979 villages are considered to be malaria-endemic [14-29].

Anopheles flaviostris, which breeds in clear, slow-flowing streams, is the insect vector for the major *Plasmodium* species, *P.f.*, which accounts for 75% of infections in the country. Anti-malarial drug resistance is widespread but low-grade.

1.2.2. Malaria in Palawan

In the Philippines, malaria is most endemic in Palawan, where it has (up until the time of writing: 3 February, 2014) consistently ranked as one of the top 5 causes of morbidity [15-29] (Figure 1). Although the annual parasite index (API) per 1,000 decreased from 27.6 in 2004 to 13.0 in 2010. The annual number of cases in the province exceeded 1,000 in 2012.

The province of Palawan is the fifth largest island in the Philippines [30,31]. It is largely covered with tropical rainforest, and consists of 367 villages in 23 municipalities [30,31]. Its capital, Puerto Princesa City, is located at the center of the island and divides the island into the northern and southern regions. According to the Census of Population and Housing in 2010, the total registered population was estimated to be 1,025,800 (527,200 male and 498,600 female) [30,31]. The population is comprised of various ethnicities, including Tagalog (the predominant ethnic group in the Philippines),

Cuyunon, Hiligaynon, Palawan, Cebuano, Ilocano, Bisaya, Kagayanan, and Tagbanwa. Of them, some people from indigenous ethnicities do not speak Tagalog (the primary language of the Philippines).

Infections mainly occur in the tropical rainforests or adjacent areas during the rainy season (June to October) [15-29]. Peaks of transmission are usually 2 months after the start of the rainy season and towards the end of the rainy season. Malaria has commonly affected upland subsistence farmers, indigenous cultural groups, forest product gatherers, frontier settlers, migrant agricultural workers, charcoal makers, and miners.

1.2.3. Microscopists in Palawan

In 1999, 344 community health workers (CHWs) in Palawan (one for each endemic village, excluding 76 non-endemic villages) were trained as malaria microscopists [14]. Using CHWs is a potentially inexpensive, effective and sustainable approach for bringing malaria treatment closer to homes [32-54]. It has particular application in rural areas, such as Palawan, where there is a recognized paucity of formal public and private healthcare providers.

Microscopists in Palawan are trained as CHWs specialized in malaria microscopic diagnosis and treatment. Microscopists identify malaria infection and species of parasites, by microscopic examination of Giemsa-stained blood smears. Under the supervision of midwives, microscopists have administered first-line anti-malarial drugs to malaria patients. In most part of the province, midwives are the only health-care professionals. Except some wealthy people who are mainly living in Puerto Princesa City, majority of the vast area of Palawan are visiting microscopists when they are suspected to be infected with malaria.

This community-based malaria control programme, named *Kilusan Ligtas Malaria* (KLM) (Tagalog: Movement Against Malaria), has been maintained with the aid of the Japan International Cooperation Agency and the ongoing Global Fund Project through Pilipinas Shell Foundation, Inc. Activities run by KLM have included basic malaria microscopy and refresher courses for microscopists, the hosting of an annual malaria conference and the maintaining of logistic measures.

1.2.4. New strategies are required to reduce malaria re-infection

To further reduce the endemicity of malaria in Palawan, in addition to providing

early diagnosis and prompt treatment, microscopists are expected to conduct community awareness-raising activities for malaria prevention. In Palawan, there has been an ongoing yearly decrease in malaria morbidity and mortality since 1999, although the decrease in the rate of morbidity has slowed since 2006 [15-29]. It is now important for community members to take preventive measures on an individual basis and for microscopists to assist this by raising malaria awareness in their respective communities.

For malaria control, the WHO recommends the use of insecticide-treated nets (ITNs) and indoor residual spraying (IRS) [1]. KLM has distributed 30,804 insecticide-ITNs and re-treated 17,916 existing nets with insecticide. The provincial health office regularly conducts IRS. The stabilization of malaria incidence since 2006 suggests that it is time for community members to take additional preventive measures on an individual basis and for microscopists to assist these measures by raising malaria awareness in their communities.

Several studies have been conducted to determine associated factors and risk factors of several preventive measures against malaria and knowledge on malaria. Despite the massive scaling-up of ITN and IRS, malaria prevalence remains high in

several areas, and a number of risk factors have been identified, namely: a history of high transmission, low community and individual wealth, house design, ethnicity, and being a child [55-57].

The improvement of knowledge on malaria is also important for facilitating preventive measures against malaria. Interventions, including community awareness-raising activities carried out by CHWs have succeeded in improving knowledge on malaria in communities [58]. Moreover, gender, poverty, human mobility, conflict, and displacement, also determined vulnerability with regard to malaria knowledge and coping strategies [59,60]. However, no study has ever been conducted among the inhabitants of Palawan to identify factors that strengthen preventive measures against malaria.

1.3. Objectives

I conducted two community-based studies, which aimed at forming strategies for reducing malaria re-infection among ex-patients who visited microscopists in Palawan. Because, people who have past histories of malaria, or ex-patients, are liable to contract malaria again, or to be re-infected, on account of their way of life, occupations, lacking

preventive behaviors, and so on, thus they are very important population to be taken into account for whom I think of a effective malaria control. In Palawan, re-infection seems more common than recrudescence or relapse among ex-patients since those microscopists are well treating their patients with *P.f.* not to have recrudescence and those with *P.v.* not to have relapse (by administering primaquine).

Study 1 aimed to identify the factors associated with the microscopists' implementation of community awareness-raising activities with regard to both the types of activities and the frequency at which they were implemented (Figure 2). I hypothesized that "socio-demographic status," "service quality," "knowledge on malaria," "ability in malaria microscopy," "job satisfaction," and "self-preventive measures against malaria" would be associated with "community awareness-raising activities for malaria prevention".

Study 2 was designed to identify factors associated with self-implemented preventive measures against malaria among ex-patients in Palawan (Figure 2). I hypothesized that "place of residence," "socio-economic status," "health seeking behavior," "malaria knowledge" (symptoms, transmission, vector species, and vector's most active time), "participation in community awareness-raising activities," and

“satisfaction with microscopists” would be associated with “self-implemented preventive measures against malaria.”

Since malaria incidence is very different in the northern and southern regions of the island, the regional differences of all the factors were also statistically clarified.

CHAPTER 2

Study 1: Determining the active role of microscopists in community awareness-raising activities for malaria prevention

2.1. Methods

2.1.1. Study design and site

A cross-sectional study was conducted among microscopists in the Palawan.

2.1.2. Participants

Inclusion criteria were that, at the time of the survey, the participant was living in Palawan and that they were both registered and working as a microscopist. In this present study, the term “microscopist” refers to a CHW who is trained as a microscopist and diagnoses malaria in febrile patients using a microscope, and prescribes first-line anti-malarial drugs when patients have malaria. Microscopists also implement community awareness-raising activities aimed at preventing transmission of malaria among their patients and their patients’ families. Before starting work, they were trained

by trainers from a “Training of Trainers” programme conducted with malaria specialists from Japan and the Philippines [14]. In 2011, there were 290 registered microscopists, all of whom understood Tagalog. The total number of the microscopists decreased because those microscopists who served in the areas where malaria were no more endemic retired.

2.1.3. Data collection

I originally planned to recruit all 290 active microscopists in Palawan by contacting them at a malaria congress in the southern municipality (Brooke’s Point) in November 2010, and at the refresher courses held in the northern municipalities (Taytay and San Vicente) in February 2011 (Figure 3). However, 127 out of 290 active microscopists attended these seminars. The first and second data collection sessions recruited 81 participants and 46 participants, respectively. All attendees agreed to participate in the present study and provided written consent. The remaining microscopists could not attend the congress or the refresher course seminars due to transportation problems mainly because they were living in the remote islands or in the mountains such as Balabac, Busuanga, Coron, Culion, Linapacan, Quezon, and Rizal municipalities.

Self-administered questionnaires were handed out to all of the 127 attending microscopists. The literacy level among microscopists' was considered sufficient to properly understand and answer all of the questions in the questionnaire because most of the microscopists (96.1%) graduated from high school (48%), college (45.7%), or higher (4.%). Of those who did not graduate from high school or college, three participants had not completed any grade of education (2.4%) and one (0.8%) had completed elementary school. I closely supervised all processes of data collection. However, all of the participants were able to read and answer the questionnaires by themselves and there were no inconsistencies in their responses.

2.1.4. Measurements

A structured questionnaire was developed (Figure 2). It included 134 questions regarding: (1) socio-demographic status; (2) community awareness-raising activities for malaria prevention; (3) service quality; (4) knowledge on malaria; (5) self-preventive measures against malaria; (6) ability in malaria microscopy; and (7) job satisfaction. Questions (2–5) were derived from the indices developed by Yasuoka et al. [61,62]. These indices were already used to measure the multi-dimensional quality of

community malaria health workers in Cambodia. To measure (6) ability in malaria microscopy, a series of questions was developed based on the official training content for microscopists [2,63]. For (7) job satisfaction, the short form of the Minnesota Satisfaction Questionnaire was used. This questionnaire has been applied globally to measure the level of job satisfaction among health care professionals [64]. Additionally, regional data on demographic and malaria endemicity were also collected in the Provincial Health Office of Palawan. To enhance the validity and reliability of these questionnaires, they were pre-tested after having been reviewed by two local malaria experts who were fully knowledgeable on the situation of microscopists in Palawan.

2.1.4.1. Socio-demographic status

The socio-demographic variables that were analysed included age, gender, marital status, educational status, ethnicity, religion, occupation, household wealth, duration of work as a microscopist, distance from their house to the nearest health centre, and reason for becoming a microscopist.

2.1.4.2. Community awareness-raising activities for malaria prevention

Community awareness-raising activities are defined as activities to enhance a community's knowledge on malaria and its prevention of community people. The

microscopists in Palawan perform community awareness-raising activities mainly among their patients and their patients' families. They explain the process of malaria transmission and how to protect themselves from malaria. At such occasions, if necessary, the patients and their families are provided with WHO printed materials prepared by KLM staff [63].

To investigate the microscopists' involvement in malaria prevention, the types and frequencies of community awareness-raising activities that they had implemented were measured. Microscopists were asked about the frequency of awareness-raising activities for eight preventive behaviors. Among the eight questions that were asked, six were about preventive behaviors for malaria infection, namely: "sleep inside bed nets," " bring mosquito nets to the forest," "wear long-sleeve shorts/pants," "fill out water pools," "cover water jars/tanks," and "spray house." These questions included three response levels: "always (3)," "sometimes (2)," and "never (1)." The other two questions were about stigmatized attitudes: "should not come close to malaria patients" and "should not share utensils with malaria patients." These questions also included three response levels, "always (1)," "sometimes (2)," and "never (3)." The total score of eight questions was treated as a continuous variable, and a higher score was interpreted

as being indicative of greater activity in community awareness-raising activities.

2.1.4.3. Service quality

Service quality was measured by asking questions on four assessment indicators: "active detection," "diagnosis and treatment," "prescription of anti-malarials," and "follow-up." In the case of "active detection," the microscopists were asked about the regularity of home visits to detect malaria. Response levels ranged from "never (0)" to "regularly (3)." "Diagnosis and treatment" included five questions with three response levels ranging from: "never (0)" to "always (2)." For "prescription of anti-malarials," four questions were asked, with response levels ranging from "never (0)" to "always (2)." "Follow-up" was measured by asking about the frequency of follow-up consultations with recovered patients and ranged from "never (0)" to "always (2)." Each of the four assessment indicators was divided by its maximum number of points, to give a maximum score of 1. The total score (range: 0–4) was treated as a continuous variable, and a higher total score was interpreted as being indicative of a higher quality of service from microscopists.

2.1.4.4. Knowledge on malaria

To measure knowledge on malaria, four questions about malaria symptoms, six

questions about malaria transmission, six questions about vector species, and four questions about most active time of vector were asked. The answer for each question was “correct (1),” or “incorrect (0).” As for the service quality index, each of the four assessment indicators was divided by its maximum number of points - giving a maximum of score of 1. The total score of these four assessment indicators (range: 0–1) was treated as a continuous variable.

2.1.4.5. Self-implemented preventive measures against malaria

Self-implemented preventive measures against malaria are defined as preventive activities against malaria taken by microscopists for themselves. Attitudes towards the performance of self-implemented preventive measures against malaria were measured using five questions with three response levels ranging from “never (0)” to “always (2).” Responses indicated various preventive behaviors that the respondents had implemented, including: “come back home before dawn,” “wear long-sleeved shirts/pants,” “sleep inside bed nets at home,” “refrain from going to the forest,” and “bring hammock nets to the forest”. A higher score was interpreted as indicating that a respondent had a greater tendency to perform self-implemented preventive measures against malaria. The total score was treated as a continuous variable.

2.1.4.6. Ability in malaria microscopy

Ability in malaria microscopy was measured with seven questions on "preparation and documentation," 21 questions on "slide preparation and observation," seven questions on "safe handling and disposal" of the smears, and 24 questions on "knowledge on the morphology of infected RBCs (red blood cells)" by *Plasmodium falciparum*, *Plasmodium vivax* and *Plasmodium malariae*. The sections "preparation and documentation," "slide preparation and observation" and "safe handling and disposal" included three response levels: "always (2)," "sometimes (1)," and "never (0)." Regarding "knowledge on the morphology of infected RBCs," eight questions were asked for each of the three species of parasite. The 24 questions could be answered with "correct (1)" or "incorrect "(0)". The sum of the scores for all questions was calculated and the total score was treated as a continuous variable.

2.1.4.7. Job satisfaction

To measure job satisfaction, the short form of the Minnesota Satisfaction Questionnaire was used. It included 20 questions with five response levels ranging from "very dissatisfied (1)" to "very satisfied (5)." A higher score indicated greater job satisfaction.

2.1.5. Statistical analysis

After confirming the accuracy of the entered data, two types of statistical analysis were conducted. First, descriptive analysis was conducted to gain an overview of the characteristics of the participants. Second, structural equation modeling (SEM) was used to identify the factors associated with the number of community awareness-raising activities for malaria prevention. SEM is a statistical technique for testing hypothesis using a combination of observed variables and qualitative causal assumptions (latent variables). Observed variables were classified, and conceptualized by using latent variables. By precisely analyzing the relationships and structures between these variables, associate factors with the outcome were determined. For example, in our study, one of observed variables was “service quality” which was then conceptualized by a latent variable, “microscopists’ capacity.” The relationship of the former and the latter variables was analyzed in the study. Multivariate analyses, including multiple linear regression analysis, are not suited to conceptualize multiple dimensional constructs.

The correlation of all variables was examined and a path model was built based on

the results of bivariate analysis (state model). The fit of the model was examined in terms of degree of freedom (df), chi-square (CMIN), comparative fit index (CFI), and root mean square error of approximation (RMSEA). According to conventional criteria, a good fit was indicated by CMIN / df < 2, CFI > 0.97, and RMSEA < 0.05, and an acceptable fit by CMIN / df < 3, CFI > 0.95, and RMSEA < 0.08 [65]. All statistical analyses were conducted using SPSS version 18.0 and Amos 18.0 (SPSS Inc., Chicago, IL, USA).

2.1.6. Ethical considerations

All participants had a clear understanding of the principles of confidentiality and voluntary participation. Written consent was obtained from all participants before the questionnaires were distributed. The present study was approved by the Research Ethics Committee of the University of Tokyo (3001) and upheld by the Palawan Provincial Health Office.

2.2. Results

2.2.1. Population distribution, confirmed malaria cases, API, and microscopist /

region

Table 1 shows each region's population, confirmed malaria cases and percentage of *P. falciparum* cases, annual parasite index (API) per 1,000 population, and the distribution of microscopists and participants per region in the year 2011. The majority (3,803 of 4,984, 76.3%) of malaria cases in Palawan were *P. falciparum*. The API of the southern region was approximately 20 times higher than that of the northern region ($p < 0.0001$). The API was especially high in the southern-most municipalities of Balabac (21.5), Quezon (19.4) and Rizal (33.2). In the majority of the northern municipalities, the API was < 1.

In order to achieve an even distribution of microscopists, the organizers attempted to invite equal numbers of participants from the northern and southern regions. In total, 67 out of 115 northern microscopists (58.3%) and 60 out of 145 southern microscopists (41.4%) participated in the study. Because of the participation in the pre-tests, microscopists from central regions did not participated in the final study.

2.2.2. Socio-demographic status

Table 2 shows the results related to the socio-demographic status of respondents

with respect to their places of assignment. To clarify the regional differences between northern region and southern region, in several socio-demographic variables, a Chi-square test or Fisher's exact test was conducted. The participants' ages ranged from 28–51 (mean 39.4 years, SD 7.4). The vast majority (about 90%) were female, of whom 82.7% were married. Forty-eight percent of the participants had graduated from high school and 48.8% had undertaken education beyond a high school level.

Homemakers comprised 73.2% of respondents. The remaining respondents were employed in jobs that included rice or coconut farmers, fishermen, in tourism-related businesses and midwives. The ethnicity and religion of respondents varied. Eleven ethnicities, with the Cuyunon and Bisaya indigenous groups making up the majority, are differently distributed from the northern to southern region (Fisher's exact test, $p < 0.001$). The majority of the participants were Christian (67.7% Catholic, 27.6% other denominations) and 4.7% were Muslim. The Muslim respondents all came from the southern region of Palawan. Half of the participants had electricity, radio, television, and a house with tin or cement walls. About 20% had refrigerators, bicycles, and motorcycles. The participants from the southern region had higher household wealth than those from the northern region (Independent t-test, $p < 0.001$).

The average duration of experience as a microscopist was 94.3 months (about 8 years). Most participants (76.4%) had become microscopists within three years of the start of the project. Microscopists in the northern region had greater experience than those in the southern region (Welch test, $p < 0.01$).

The average distance from a microscopist's home to the nearest health center (where most microscopists treat patients) was 21.2 minutes on foot (SD 26.3).

Most participants became microscopists voluntarily (93.7%). The reasons that they stated for becoming microscopists included: interest in reducing malaria in the village (66.1%), interest in saving villagers' lives (6.3%), interest in malaria treatment and prevention (9.4%), and other reasons (11.9%). The remaining 6.3% of respondents had been nominated by community members or community leaders. The northern district had more nominated people than the southern region (Fisher's exact test, $p = 0.065$).

2.2.3. Community awareness-raising activities for malaria prevention

Differences in numbers were found in the community awareness-raising activities for malaria prevention that were reported to have been implemented by the microscopists. Almost all (99%) of the participants reported that they had undertaken at

least one measure to prevent malaria infection in their community. More than 90% of the participants encouraged the community members to "sleep inside bet nets," and "wear long-sleeve shirts/pants," to avoid being bitten by infected mosquitoes and to "cover water jars and tanks." Most participants (75.2%) reported always spraying their houses, while 22.4% reporting that they sometimes sprayed. However, some reported having passed on incorrect, stigma-based information: 15.7% told community members not to come close to malaria patients and 6.3% told community members not to share eating utensils with malaria patients. Only 68.5% of the participants explained the importance of bringing mosquito nets when people had to stay in the forest.

2.2.4. Service quality

The average length of time per week that the participants spent for preventive activities was 18.2 hours (SD 24.9) in the dry season and 16.3 hours (SD 21.6) in the wet season. For curative activities, participants spent 9.4 hours per week (SD 18.0) in the dry season and 8.4 hours (SD 21.6) in the wet season. The geographical difference did not significantly influence the length of time spent on these activities.

The majority (93%) of participants were able to properly perform the basic and

important task of making blood smears from febrile patients and diagnosing malaria infection. When they diagnosed people malaria positive, 87% of participants reported that they always gave anti-malarials.

As many as 91.3% of the participants reported that they either regularly or sometimes perform active detection. On a weekly basis, or sometimes several times per week, participants would visit patients in their community who had trouble with traveling to the nearest health center. Regarding prescription of anti-malarials, 91.3% of the participants successfully described the dosage and 92.9% of them could also explain the importance of compliance. A relatively small number (67.3%) explained to patients that compliance failure could result in incomplete treatment, while 88.2% could explain reasons for drug resistance. Regarding follow-up, 65% of the participants always checked if patients recovered and 89% reported that they always asked the patient's family whether the patient had recovered satisfactorily.

2.2.5. Knowledge on malaria

The percentages of participants who could obtain full scores for knowledge on malaria transmission, vector species and most active time of the vector were 57.9%,

63.5%, and 67.9%, respectively. It is notable that far fewer respondents were able to correctly respond to the questions on malaria symptoms, with only 35% obtaining a full score, and with 45.7% including diarrhea as a symptom of malaria. The malaria knowledge scores did not differ significantly between the northern and southern regions of Palawan.

2.2.6. Self-implemented preventive measures against malaria

The percentage of participants that reported always coming home before dawn was 63.8%, but the responses from the northern region (46.3%) and the southern region (83.3%) differed markedly ($p < 0.01$). The majority (92.1%) of respondents reported that they always wore long-sleeve shirts and pants to avoid mosquito bites; of these 88.1% were from the northern region, and 96.7% were from the southern region. Almost all of the respondents (97.6%) reported always sleeping inside bed nets at home, this included 95.5% of respondents from the northern region and all (100%) of respondents from the southern region. Approximately half (51.2%) of the respondents (35.8% from the northern region, 68.3% from the southern region) always refrained from going into the forest and if it was necessary to go into the forest, 69.3% (62.7%

from the northern region, 76.7% from the southern region) reported that they always took a mosquito net. Participants from the southern region of Palawan were taking more preventive measures than participants from the northern region ($p < 0.001$).

2.2.7. Ability in malaria microscopy

Table 3 shows the details and results of ability in malaria microscopy index (name of index, number of subscale, maximum score, content, participants' mean score, SD, and accuracy rate). Most participants were able to perform the preparation and documentation, slide preparation and observation, safe handling and disposal of the blood smears, with each of the factors showing high mean values and satisfactory accuracy rates.

The questionnaire for knowledge on the morphology of infected RBCs and the answers of participants are shown precisely in Table 4. Participants had a high ability to discriminate *P. falciparum.*, the most harmful species of the parasite, from the other parasite species from the characteristics of infected RBCs.

2.2.8. Job satisfaction

The average job satisfaction score in all participants was 83.4 (SD 8.9) out of 100 points. The participants reported that they were mostly satisfied to have the chance to contribute to their community: “the chance to do things for other people” (very satisfied/satisfied = 72.9%), “the chance to do something that makes use of my abilities” (very satisfied/satisfied = 67.3%), and “the chance to tell people what to do” (very satisfied /satisfied = 74.8%). The participants were also satisfied with the honor of being microscopists: “the chance to be “somebody” in the community” (very satisfied/satisfied = 64.8%), “the praise I get for doing a good job” (very satisfied/satisfied = 74.2%) and “the feeling of accomplishment I get from the job” (very satisfied/satisfied = 73%). They were satisfied with the way the jobs done: “the working conditions” (very satisfied/satisfied = 53.5%), “the chance for advancement in this job” (very satisfied/satisfied = 76.1%), “the way malaria control program policies are put into practice” (very satisfied/satisfied = 75.1%), and “the way my boss handles his/her workers” (very satisfied/satisfied = 61%). The lowest level of satisfaction noted among microscopists was in regard to the salary (high dissatisfaction 6.3%, dissatisfaction = 28.9%).

2.2.9. Factors associated with community awareness-raising activities for malaria prevention

Bivariate analyses were conducted between all variables and several significant correlations were found (Table 5 and Table 6). A significant positive correlation was found between the number of community awareness-raising activities for malaria prevention and service quality, ability in malaria microscopy, and general job satisfaction (Table 5). The place of assignment (1 = northern region, 2 = southern region) was positively and significantly correlated with API (Pearson's r = 0.76, $p < 0.01$), self-implemented preventive measures against malaria (Pearson's r = 0.31, $p < 0.01$), and general job satisfaction (Pearson's r = 0.29, $p < 0.01$) (Table 6).

Based on these bivariate analyses, a hypothetical SEM was built to examine the relationship between community awareness-raising activities and other variables. The hypothetical SEM was selected from several models, with consideration of fitness between the data and the model, and of the usability obtained from the results. The latent variable was assembled from three similar observable variables. An upper latent variable ("microscopists' capacity") was set on "service quality," "knowledge on malaria," and "ability in malaria microscopy," because these three indices account for

the “microscopists’ capacity” (Figure 4). The use of the latent variable promotes greater efficiency and productivity in analysis than directly using multiple observable variables. The correlations between “service quality” and both “knowledge on malaria” and “ability in malaria microscopy” were found to be significantly high ($p < 0.05$ and $p < 0.001$, respectively) (Table 6).

The results of the SEM are illustrated in Figure 4. In this model, the following directional paths were drawn: from place of assignment to API, microscopists’ capacity, general job satisfaction, and self-implemented preventive measures against malaria; from API to microscopists’ capacity, general job satisfaction, and self-implemented preventive measures against malaria; from general job satisfaction to microscopists’ capacity; from microscopists’ capacity to ability in malaria microscopy, knowledge on malaria, and service quality; from microscopists’ capacity, general job satisfaction, and self-implemented preventive measures against malaria to community awareness-raising activities. Bi-directional paths from general job satisfaction to self-preventive measures against malaria were drawn.

The hypothetical SEM fit the data: CMIN / df = 0.97, CFI = 1.000 and RMSEA = 0.000 (Figure 4). It revealed that the only significant and positive association between

community awareness-raising activities was with the microscopists' capacity (path coefficient = 0.37; $p < 0.05$). Microscopists' capacity explained service quality (path coefficient = 0.52; $p < 0.05$) and ability in malaria microscopy (path coefficient = 0.63; $p < 0.05$). Job satisfaction explained microscopists' capacity (path coefficient = 0.44; $p < 0.05$), but failed to explain community awareness-raising activities. The place of assignment only impacted API (path coefficient = 0.76; $p < 0.05$), which was twenty times higher in the southern region of Palawan, and the self-implemented preventive measures against malaria (path coefficient = 0.39; $p < 0.05$), but did not impact the microscopists' capacity or job satisfaction.

2.3. Discussion

2.3.1. Minor corrections of service quality are necessary

The results of the present study showed that the quality of service from microscopists in Palawan was high, but that some minor corrections of performance are necessary on an individual-by-individual basis. Regarding service quality, although participants were trying to spend more time to improve the health conditions of their communities, the rainy season and topography might have inhibited their activities due

to associated transportation difficulties. Efforts to create better road conditions might be financially difficult, but the building of higher-quality infrastructure to facilitate reliable transportation could have a positive impact on the health of the inhabitants of Palawan. It should be noted, however, that the high follow-up coverage did not differ significantly between the northern and southern regions of the island. This might be indicative of close community relationships in Palawan - an intimacy which could play a substantial role in the microscopist intervention.

2.3.2. Inadequate knowledge on malaria

Inadequate knowledge on malaria remains a matter of concern. Only 68.5% of the participants explained the importance of bringing mosquito nets when people had to stay in the forest. This is a matter that should be addressed, given that most malaria patients from the southern region of the island were suspected to have been infected while working in the forest. In particular, microscopists are required to improve the self-implemented preventive measures of people going to the mountains for taking care of their rice paddies or fields, or working in the mines.

2.3.3. High job satisfaction

The job satisfaction of the microscopists was high in all respects except for that of salary. The work is basically unpaid, however, several municipalities give differing financial incentives, mainly to cover the cost of transportation. Some microscopists were using their own money to travel for active case detection and treatment. A strategy for improving this situation is considered necessary.

2.3.4. Microscopists' capacity was the sole factor associated with a greater number of community awareness-raising activities

In the present study, the results of SEM analysis indicated that community awareness-raising activities were solely and significantly influenced by high microscopists' capacity (service quality and ability in malaria microscopy). Knowledge did not explain microscopists' capacity. This might be because microscopists' capacity was considered to be a variable that reflected more practical capacity such as service or techniques of a microscopist. General job satisfaction had a significant and positive influence on microscopists' capacity. Consequently, this has remotely influenced the community awareness-raising activities for malaria prevention. Regarding the

microscopists' places of assignment, the present study found that it only impacted API and self-implemented preventive measures against malaria. The findings indicated that high microscopists' capacity was the sole factor associated with a greater number of community awareness-raising activities for malaria prevention. Enhancement of microscopists' capacity is the key to strengthening the community awareness-raising activities for malaria prevention that they undertake. The results also suggest a noteworthy possibility: that, with regard to microscopists' capacity, service quality and ability in malaria microscopy might be more important than knowledge on malaria. Since both service quality and ability in malaria microscopy among microscopists on Palawan were quite high, major interventions will not be needed to improve the microscopists' effectiveness. These improvements may be achieved with only minor corrections that target the strengths and weaknesses of individual microscopists in Palawan. One possible area for that could be strengthened is diagnostic accuracy. While participants were able to differentiate *P. falciparum* from other forms of *Plasmodium*, but detailed identification of the other species could be better promoted.

2.3.5. Job satisfaction impacted on work performance

The present study supports the impact of job satisfaction on work performance. Although no research has been done with microscopists, the effect of job satisfaction has been investigated in relation to performance/productivity, demission/career change, and absence [66-68]. The correlation between job satisfaction and productivity is reported to be greater for those in professional jobs [69]. The position of microscopist in Palawan is a professional job that requires special skills, thus this might have impacted the outcome. Moreover, another study reported that, especially in women, job satisfaction was negatively correlated with workplace absences not due to sickness [70]. Since the majority of the microscopists were women, the relationship between job satisfaction and performance may be strengthened. If a person is satisfied with his or her job, this satisfaction presumably leads to better job quality. In any type of health facility, the mission is to achieve the highest attainable level of medical practice. For this purpose, employee job satisfaction among health facility staff is very important, not only for employee wellbeing but also for the health facility and the community. The job satisfaction of microscopists and other CHWs should be the subject of greater attention and emphasis.

3.3.6. The place of assignment did not impact awareness-raising activities

The place of assignment was only linked with API and self-implemented preventive measures against malaria. It was assumed that people who lived in highly endemic areas were taking more self-implemented preventive measures against malaria than those who lived in less endemic areas. The microscopists in the southern region had many more duties to perform than those in the northern region, but geographic location was found to have no significant impact on job satisfaction, microscopists' capacity, and community awareness-raising activities for malaria prevention. This may be verified by the quality of the training program for microscopists. Alternatively, job satisfaction, microscopists' capacity and involvement in community awareness-raising activities could be determined, not by the scale of the job, but by other elements such as trust or respect from the community. Further studies are needed to determine the effects of these elements.

In 2009, the API was 20 times higher in the southern region of the island than it was in the north. These results indicated that the activity-level of the microscopists in the southern region was high. However, they also indicated that appropriate treatment and diagnosis alone is not sufficient to achieve a decrease of malaria in the southern

region. The strengthening of malaria preventive measures in the southern region is still necessary and thus the implementation of community awareness-raising activities by microscopists should be of the highest priority.

2.3.7. Limitations

The limitations of the present study should be noted. Firstly, the nature of SEM should be considered. SEM is a theory-driven (confirmatory) approach and is not a causal approach, thus the possibility of an opposite directional path cannot be ruled out. For example, the directional path from job satisfaction towards microscopists' capacity might be opposite or dual-directional (correlation). Despite these limitations, the fitness of the model was satisfactory high, and moreover, only SEM permits us to realize the conceptualizations as shown in Figure 4. Further longitudinal research might be needed to examine the causality. The method of data collection was the second limitation. It was not possible to conduct a random sampling because of the difficult geographical situation and security problems in Palawan. Microscopists who did not participate in the present study were mainly living in the remote islands of the province and had transportation problems. However, few malaria cases were reported from the remote

islands, and it could be said that the present study was able to obtain the information from areas with a greater malaria burden. Present results may not be generalizable to the microscopists from the central region due to lack of participants from that area. The third limitation was that the Cronbach's alpha reliability coefficients of "service quality index" and "self-implemented preventive measures against malaria index" were relatively low. The results implied that service quality and self-implemented preventive measures against malaria varied by individual, but further research is needed to explore this issue. The fourth limitation was the possibility of the answers to be biased by participants' subjective judgments. Although a self-administered questionnaire is a valuable method of collecting a wide range of information, this bias cannot be totally avoided.

2.4. Conclusions

The present study was conducted to identify the associate factors of community awareness-raising activities for malaria prevention by microscopists in Palawan. Microscopists' capacity was found to be a significant factor for community awareness-raising activities. The significance of microscopists' capacity can be explained by its two sub-components: service quality and ability in malaria microscopy.

Job satisfaction also explained microscopists' capacity; however, it did not affect community awareness-raising activities. Minor corrections depending on the strengths and weaknesses of individual microscopists are necessary in order to improve service quality and ability in malaria microscopy. The implementation of such corrections is an intervention that might succeed, not only in achieving an improvement in microscopists' capacity, but also in achieving an increase in the number of community awareness-raising activities for malaria prevention that take place in the communities of Palawan. Microscopists' awareness raising activities will lead to their ex-patients' self-implemented preventive measures, which consequently achieve reducing malaria re-infection. These findings point towards the possibility of implementing some relatively simple, low-cost interventions to boost the effort to reduce the number of malaria cases in Palawan.

CHAPTER 3

Study 2: Determining the factors associated with self-implemented preventive measures against malaria among ex-patients

3.1. Methods

3.1.1. Study design and site

The present study was a cross-sectional study conducted from January to February in 2012, in 20 rural villages situated in four highly malaria-endemic provinces in Palawan, Philippines: 6 villages in Roxas (northern region), 7 villages in Puerto Princesa City (central region), and 2 and 5 villages in Bataraza and Brooke's Point, respectively (southern region) (Figure 5). The study sites, which evenly cover the island of Palawan were chosen, with consideration for malaria transmission, following discussions with local malaria experts. All of the study villages chosen from the 137 villages of the four provinces were in highly endemic areas (at least two cases a year per 1,000 population). All of the ex-patients in each village were targeted. In 2011, the APIs of each targeted municipalities were: 2.98 in Roxas, 5.87 in Puerto Princesa City, 20.4

in Bataraza, and 9.59 in Brooke's Point. The remaining high-transmission municipalities (Quezon, Rizal, Sofronio Espanola, and Balabac) were not chosen due to location (mountain or islands) and/or safety concerns (several active militant separatist groups were based around these mountain areas). Since members of these separatist groups were frequently the patients of the microscopists, the local facilitator strongly suggested that I should not approach these municipalities.

3.1.2. Participants

The 141 participants, who comprised 15.1% of the ex-patients in the 4 municipalities, all had a history of malaria. After obtaining permission for the study from the governor of the Palawan Provincial Health Office and each respective Municipal Health Office, lists of malaria patients 2011 were collected from each of the rural health units and village health units. The lists were used to select highly malaria-endemic villages.

3.1.3. Data collection

Data collection in the villages was carried out with the support of the microscopists

and health center staff. Participants living near a health center were asked to assemble at the health center; home visits were conducted for participants whose homes were more distant. Farmers and gatherers living in distant mountains, migrant agricultural workers, miners, and members of militant separatist groups were excluded from the study.

3.1.4. Measurements

An interviewer-administered structured questionnaire with 45 questions was developed (Figure 2). The questionnaire addressed: (1) socio-demographic status, (2) self-implemented preventive measures against malaria, (3) knowledge on malaria, (4) participation in community awareness-raising activities for malaria prevention, (5) satisfaction with microscopists. As well as Study 1, (2) self-implemented preventive measures against malaria, and (3) knowledge on malaria were derived from the indices developed by Yasuoka et al [61,62]. Pre-testing and reviewing by two local malaria experts who were fully knowledgeable on the situation of microscopists in Palawan, enhanced the validity and reliability of these questionnaires.

Data on malaria-endemicity was also collected in the Provincial Health Office of Palawan. The questionnaire was developed in English and translated to Tagalog by local

malaria experts. Given that some of the participants were members of indigenous groups and did not speak Tagalog, the questionnaire was also translated into indigenous languages by health center staff members who were fluent in both Tagalog and the languages to which they translated the questionnaires. The validity and reliability of the questionnaire was enhanced by pre-tests in villages in Puerto Princesa City, and repeated discussions with three malaria experts who were familiar with the situation in Palawan.

3.1.4.1. Socio-demographic status

Ten questions were asked on socio-demographic status: age, gender, marital status, educational status, ethnicity, religion, occupation, number of adults and children in the household, household wealth. Economic status was measured by asking the items in the household.

3.1.4.2. Self-implemented preventive measures against malaria

Attitudes toward the performance of self-implemented preventive measures against malaria were measured by five questions with five response levels ranging from never to always (1 – 5 points). The questions asked whether participants "sleep inside bed nets at home," "return back home before dawn," "wear long-sleeved shirts/pants," "refrain

from going to the forest," "bring hammock nets to the forest." A higher score was interpreted as indicating that a respondent had a greater tendency to perform self-implemented preventive measures against malaria. The total score (maximum 25 points) was treated as a continuous variable.

3.1.4.3. Knowledge on malaria

Knowledge on malaria was measured to quantify the participants' understanding on the disease. This section contained 5 questions on "malaria symptoms," 7 questions on "malaria transmission," 6 questions on "vector species," and 4 questions on "vector's most active time." Correct answers were coded as "1." Incorrect answers were coded as "0." Each of the 4 items was divided by its maximum number of points, to give a maximum score of 1, which was treated as a continuous variable.

3.1.4.4. Participation in community awareness-raising activities for malaria prevention

Participants were asked if they had participated in any kind of community awareness-raising activities for malaria prevention, based on 7 sources of awareness-raising activities: microscopists, parents, school education, television, book/magazine, information education community, and other. The questions could be

answered with “no,” which was coded as “0,” or “yes,” which was coded as “1.”

3.1.4.5. Satisfaction towards microscopist

Satisfaction with microscopists was measured by one question: “Are you satisfied with the work of your microscopist?” The question had five response levels, ranging from bad to very good (1 – 5 points). The score was treated as a continuous variable.

3.1.5. Statistical analysis

After confirming the accuracy of the entered data, two types of statistical analysis were conducted. First, descriptive analysis was conducted to overview the characteristics of the participants. Second, SEM was used to identify the factors associated with self-implemented preventive measures against malaria. I adopted SEM as multivariable analysis for the same reason as Study 1 (Page 18) and the fit of the model was examined in terms of df, CMIN, CFI, and RMSEA. All statistical analyses were conducted using SPSS version 18.0 and Amos 18.0 (SPSS Inc., Chicago, IL, USA).

3.1.6. Ethical considerations

The principles of confidentiality and voluntary participation were clearly understood by all participants. Written consent was obtained from all participants before the questionnaires were asked. The present study was approved by the Research Ethics Committee of the University of Tokyo (3001) and by the Palawan Provincial Health Office.

3.2. Results

3.2.1. Socio-demographic status

Of the 141 participants, 79.4% were female and 86.5% were married (Table 7). Religion, ethnicity, educational status, and occupation differed significantly between regions ($p < 0.001$, $p = 0.003$, $p = 0.001$, and $p = 0.002$, respectively). Most participants from the northern and central regions were Catholic (73.7% and 77.3%, respectively), in contrast with participants from the southern region who listed their religion as Christian except Catholic (59.5%) and Muslim (5.4%).

In the northern and central regions the numbers of participants who listed their ethnicity as Tagalog or an amalgamation that included Tagalog were, 68.5% and 83.4%,

respectively. In contrast, 51.4% of the participants listed ethnicities other than Tagalog, the Palawan ethnic group accounted for 32.4% of these participants.

Nearly half of the participants from the northern and central regions graduated from high school (55.3% and 48.5%, respectively), while 45.9% of participants from the southern region reported an elementary grade of educational attainment (45.9%).

Occupation also differed between regions: about half (52.6%) of the participants from the northern region were homemakers; 48.5% of the participants from the central region had jobs other than homemaker or farmer (such as shopkeeper or owner, personal business owner, or construction worker); 40.5% of the participants from the southern region were farmers.

Age, number of people in household, number of children, and household wealth did not differ between regions (Table 8). The average age of the participants was 39.3 years (SD 13.2), the average number of people in each household was 5.5 (SD 2.0), the average number of children per person was 3.0 (SD 1.8), and the average household wealth was 1.5 points (SD 5.2).

3.2.2. Self-implemented preventive measures against malaria

Self-implemented preventive measures against malaria did not differ between regions (Table 8). Interestingly, all of the participants (100%) reported that they always slept inside bed-nets when they were home (Table 9). Most participants (77.4%) stated that they always/mostly returned home before dawn, and 69.9% reported that they always/mostly wore long-sleeved shirts/pants to avoid mosquito bites. While 38.4% reported that they never/rarely refrain from going to the forest, only 15.0% stated that they always/mostly brought hammock nets to the forest.

3.2.3. Knowledge on malaria

Knowledge on malaria did not differ between regions except with regard to knowledge on malaria transmission ($p < 0.001$) (Table 8). The participants from the central region had significantly higher knowledge on malaria transmission than participants from the other regions. Knowledge on malaria transmission was higher than knowledge on any other aspect of malaria.

3.2.4. Participation in community awareness-raising activities against malaria

The majority of participants (80.9%) had participated in community

awareness-raising activities against malaria that had been established by a microscopist (Table 10). The other sources of awareness-raising activities were inactive: information education community (8.5%), school education (2.8%), book/magazine (2.1%), television (1.4%), parents (0.7%), and other (12.1%).

3.2.5. Satisfaction towards microscopist

The majority of participants were very satisfied with their microscopists, with an average of 4.6 points (SD 0.9) out of a maximum of 5 (Table 8). The satisfaction with microscopists was especially high in the northern region (4.9 points, SD 0.4, $p = 0.037$).

3.2.6. Factors associated with self-implemented preventive measures against malaria

Bivariate analyses were conducted between all variables and several significant correlations were found (Table 11). A significant positive correlation was found between the number of self-implemented preventive measures against malaria and Tagalog ethnicity (Pearson's r = 0.20, $0.01 \leq p < 0.05$), knowledge on malaria transmission (Pearson's r = 0.48, $p < 0.001$), knowledge on malaria species (Pearson's r

= 0.28, $0.001 \leq p < 0.01$), knowledge on vector's most active time (Pearson's r = 0.38, $p < 0.001$), awareness-raising activities for malaria prevention by microscopists (Pearson's r = 0.46, $p < 0.001$), and satisfaction towards microscopists (Pearson's r = 0.23, $0.001 \leq p < 0.01$). There was a positive correlation between Tagalog ethnicity and better implementation self-preventive measures.

Based on these bivariate analyses, a hypothetical SEM was built to examine the relationship between self-implemented preventive measures against malaria and other variables. The hypothetical SEM was selected from several models, with consideration of the fitness between the data and the model, and of the usability obtained from the results.

The results of the SEM are illustrated in Figure 6. In this model, the following directional paths were drawn: ethnicity to self-implemented preventive measures against malaria (the pass-coefficient was set up as"1"); awareness-raising activities for malaria prevention by microscopist to self-implemented preventive measures against malaria; knowledge on malaria transmission to self-implemented preventive measures against malaria; knowledge on vector's most active time to self-implemented preventive measures against malaria; knowledge on vector's most active time to self-implemented

preventive measures against malaria; satisfaction towards microscopists to self-implemented preventive measures against malaria. Bi-directional paths from awareness-raising activities for malaria prevention by microscopists to satisfaction towards microscopists, knowledge on malaria transmission, and knowledge on vector's most active time; knowledge on malaria transmission to ethnicity (Tagalog), and knowledge on vector species, and knowledge on vector's most active time.

The hypothetical SEM fit the data (CMIN / df = 0.5842; CFI = 1.000; RMSEA = 0.000; Figure 6). Significant associated factors of self-implemented preventive measures against malaria were ethnicity (path coefficient = 1.00; $p < 0.05$), knowledge on malaria transmission (path coefficient = 4.90; $p < 0.01$), knowledge on vector species (path coefficient = 2.48; $p < 0.05$), knowledge on vector's most active time (path coefficient = 2.45; $p < 0.05$), awareness-raising activities for malaria prevention by microscopists (path coefficient = 4.90; $p < 0.05$), and satisfaction towards microscopists (path coefficient = 1.26; $p < 0.05$).

These six factors explained 44.6% of self-implemented preventive measures against malaria. Knowledge on malaria had significant correlations with knowledge on vector species, knowledge on vector's most active time, Tagalog ethnicity, and

awareness-raising activities for malaria prevention by microscopists.

Awareness-raising activities were also associated with knowledge on vector's most active time, and satisfaction towards microscopists. Tagalog ethnicity was positively associated with better self-implemented preventive measures against malaria than being of an ethnicity that was not an amalgamation of Tagalog. Greater knowledge on malaria transmission, vector species, and vector's most active time were positively associated with better self-implemented preventive measures. Knowledge on malaria symptoms did not affect the results. It is noteworthy that participants who experienced awareness-raising activities for malaria prevention by microscopists were found to take more preventive measures than those who did not experience such activities. Participants who were more satisfied with their microscopists also took a greater number of preventive measures against malaria than those who expressed less satisfaction.

Multiple comparisons were also performed for each pair of groups, with the comparisons denying multicollinearity (Table 11). Knowledge on malaria transmission was significantly and positively associated with knowledge on malaria species ($r = 0.21$, $p < 0.05$) and vector's most active time ($r = 0.24$, $p < 0.01$). Participants who had taken

part in awareness-raising activities by microscopists had greater knowledge on malaria transmission ($r = 0.19$, $p < 0.05$) than those who had not. Finally, while Tagalog participants knew more about malaria transmission than participants who belonged to other ethnic groups, this ethnic disparity was only found in knowledge on malaria transmission ($r = 0.22$, $p < 0.01$).

3.3. Discussion

3.3.1. Summary of Study 2

The present study was conducted to determine the factors associated with self-implemented preventive measures against malaria among ex-patients visited the microscopists. Six factors were determined by SEM: ethnicity, knowledge on malaria transmission, knowledge on vector species, knowledge on vector's most active time, community awareness-raising activities for malaria prevention by microscopists, and satisfaction with microscopists.

3.3.2. Ethnic gaps on self-implemented preventive measures against malaria

A vulnerability in malaria control among the ex-patients in Palawan was found in

relation to ethnicity, and not in education, poverty, or gender. Ex-patients who were Tagalog, which is the major ethnicity of the Philippines, took significantly more preventive measures than members of indigenous groups. Palawan is known to have several indigenous ethnicities. The inhabitants of the province are a mixture of different ethnic groups including several indigenous ethno-linguistic groups such as, Batak (mountain people), Tagbanua (people of the world), Tau't Batu (people of the rock), and Palawanon tribes [71-73]. Throughout the centuries, Palawan has received constant migration of people of Tagalog, Visayan, Chinese, and Spanish descent, who forced most of the indigenous ethno-linguistic groups from lowland areas. At present, most of these indigenous ethno-linguistic groups live in remote and malaria-endemic villages in mountain and coastal areas. These ethno-linguistic groups were not only vulnerable due to the remoteness of their villages, but also due to lack of understanding national language, education, poor health and nutritional status, and lack of recognition from government policies.

Malaria control among these indigenous ethno-linguistic groups is the key to reducing malaria incidence in Palawan, as it is in most malaria-endemic Asian countries: Cambodia, China (Yunnan Province), the Lao People's Democratic Republic,

Malaysia, and Vietnam [74,75]. While the malaria control programs covering most of these countries have achieved many positive results, the situation among ethnic minorities groups in remote and hilly areas, where healthcare facilities are limited, demands greater attention [57, 76-78]. Interventions that target indigenous groups might have been very difficult due to language and transportation issues. To reduce incidence of malaria in Palawan and elsewhere, a focus on the ethnic gap in self-implemented preventive measures could be of benefit.

3.3.3. Enhancement of the knowledge on malaria transmission is the key

Greater knowledge on malaria (malaria transmission, species, and vector's most active time) resulted in better self-implemented preventive measures against malaria. While knowledge by itself is a very important aspect of malaria prevention, knowledge alone is not enough to change human behavior. Self-efficacy theory suggests that behavioral modifications in individuals are associated with the expectation of both outcome and efficacy – both are needed for an individual to take action [77-79]. In the present study, all of the participants had suffered from malaria. By strengthening their outcome and efficacy expectations, these experiences, in combination with their new

knowledge, could have motivated modification of preventive behaviors. Several malaria control programs have pointed out a gap between knowledge and practice [75,80,81]. For example, the nuisance of mosquitoes was noted as being the greatest motivation for using personal protection in several surveys [75,82]. Thus, in Palawan, community awareness-raising activities by microscopists should focus on enhancing appropriate knowledge among inhabitants, and support them in translating this knowledge into practice.

Knowledge on malaria symptoms did not affect self-implemented preventive measures in the present study. Very few studies have identified specific types of knowledge associated with taking effective preventive measures. In the present study, knowledge of symptoms did not result in respondents taking more preventive measures. Knowledge on malaria transmission was the most significant aspect of malaria knowledge for the prevention of infection. This might be because malaria has been endemic in Palawan for centuries and the inhabitants are very familiar with the symptoms. Moreover, among all of the knowledge items, ethnic disparity was only found in knowledge on malaria transmission. Therefore, to strengthen the preventive measures taken by the inhabitants of Palawan, enhancement in knowledge on malaria

transmission is the key to achieving a similar increase in preventive measures among indigenous people who are mostly vulnerable in Palawan.

3.3.4. The effectiveness of community awareness-raising activities for malaria prevention by microscopist

Community awareness-raising activities for malaria prevention by microscopist were the major source of information that successfully increased self-implemented preventive measures against malaria among the ex-patients who visited the microscopists of Palawan. Moreover, ex-patients, who experienced awareness-raising activities by microscopists, had significantly greater knowledge on malaria transmission, which was the most important knowledge item for increasing preventive measures.

While all participants reported that they always slept under bed nets at home, 30.1% always had to go and/or stay in the forest because they had a garden to tend, and only 15.0% always brought mosquito nets to the forest. Since most malaria infections in Palawan occur in forests or adjacent areas during the night, an additional strategy is needed to enhance preventive measures implemented by people who go to the forests. Forest malaria is a complex phenomenon and remains a challenge for future research,

not only in Palawan, but also in the other malaria-endemic countries of Asia [83-86].

3.3.5. Limitations

The limitations of the present study should be noted. Firstly, the limitation of SEM should be noted. SEM is a theory-driven approach, thus the possibility of an opposite directional path cannot be ruled out. Despite these limitations, the fitness of the model was satisfactory high, and moreover, only SEM permits us to realize the conceptualizations as shown in Figure 6. Further longitudinal research might be needed to examine the causality. Secondary, the present study did not ask about some details of the activities, such as date and hour or content of the activities. The results of the present study, however, noted clearly the strong influence of awareness raising activities for malaria prevention by microscopists. Further research might be needed to understand their activities in greater detail. Thirdly, I could not conduct a random sampling because of the extended geographical situation, poor infrastructure, and security problems. The present study was conducted in four highly malarious provinces, which covered the whole island of Palawan and all types of ex-patients. However, the remaining four high transmission municipalities (Quezon, Rizal, Sofronio Espanola, and

Balabac) should not be forgotten. The inhabitants of these municipalities must not be left behind and further research and intervention based, with special attention paid to safety, must be conducted to reduce malaria incidence on the island. The fourth limitation was the possibility of the answers to be biased by participants' subjective judgments. Although trained interviewers collected the data carefully, this bias cannot be totally avoided.

3.3.6. Enhancement of awareness-raising activities by microscopist

In conclusion, now that ITNs and IRS has been scaled-up throughout Palawan, enhancement of awareness-raising activities by microscopist should be the key strategy for improving the efficacy of preventive measures taken by the ex-patients of Palawan. These activities should aim to improve preventive measures among ex-patients going to or living in the mountains, and to enhance the knowledge on malaria transmission particularly among members of indigenous groups.

Community trust and satisfaction with microscopists were high and significantly associated with the taking of a greater number of preventive measures. The microscopists' job is highly focused on malaria treatment, and the microscopists'

knowledge and sense of responsibility with regard to reducing malaria in Palawan are expected to be very high. Therefore, enhancement of community awareness-raising activities by microscopists should be a valid and feasible way to reduce malaria re-infection in Palawan.

3.4. Conclusions

Early diagnosis and prompt treatment have been extended throughout Palawan, and it is time for the inhabitants to take preventive measures against malaria by themselves in order to reduce malaria incidence through measures other than vector control with ITNs and IRS.

The present study was conducted to identify factors associated with the implementation of greater numbers of preventive measures against malaria by ex-patients in Palawan. Participants who had taken part in awareness-raising activities by microscopists, had greater knowledge on malaria transmission and were taking more preventive measures than participants who did not taken part in the activities. Thus, awareness-raising activities by microscopists could be effective in reducing malaria re-infection among ex-patients who visited the microscopists in Palawan. To further

improve this situation, these activities should be especially focused on improving the self-implemented preventive measurements among ex-patients going to the mountains, and to enhance the knowledge on malaria transmission, especially among indigenous ex-patients.

CHAPTER 4

Conclusions and Recommendations from Two Studies

The present study was conducted to determine a strategy to reduce malaria re-infection in Palawan, the Philippines. Besides early diagnosis, prompt treatment, and vector control, the ex-patients in Palawan should conduct preventive measures against malaria. For this purpose, the present study suggests the following additional strategies:

(1) Awareness-raising activities by microscopists could be effective and have to be strengthened to reduce malaria re-infection.

(2) These activities should be especially focused on improving the self-implemented preventive measurements among ex-patients going to the mountains, and to enhance the knowledge on malaria transmission especially among indigenous ex-patients.

(3) Enhancement of service quality and ability in malaria microscopy are the key to strengthening these activities, which are mainly undertaken by microscopists.

These findings point towards the possibility of implementing some relatively simple, low-cost interventions to boost the effort to reduce malaria re-infection, and consequently, malaria control in Palawan. Indeed, the participants in our study were

limited only to microscopists and ex-patients, they were very important players for passing on strong messages on malaria to their families and communities, as well as playing an important role to reduce malaria re-infection in Palawan, the Philippines.

CHAPTER 5

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Tables

Table 1

Distribution of population, confirmed malaria cases, API, microscopist / region

Region	Population	Confirmed malaria cases (*P. falciparum*)	API	Microscopists	Participants
Total	**872,390**	**4,984 (76.3%)**	**5.71**	**290**	**127 (43.8%)**
Northern Region	334,392	200 (57%)	0.60***	115	67 (58.3%)
Central Region	207,119	795 (71.2%)	3.84	30	0 (0%)
Southern Region	330,879	3,989 (78.3%)	12.1***	145	60 (41.4%)

*** Chi-square test between northern region and southern region ($p < 0.0001$). API, annual parasite index.

Table 2-1

Socio-demographic status of participants (microscopists) with respect to place of assignment

Socio-demographic status	Total (N =127)	Northern Region (n = 67)	Southern Region (n = 60)	*p*-value
Age	**(Mean = 39.4, SD = 7.4, *p* = 0.691[a])**			
Low (≤39.4)	62 (48.8%)	35 (52.2%)	27 (45%)	0.368[a]
High (>39.4)	64 (50.4%)	31 (46.3%)	33 (55%)	
Gender				
Man	13 (10.2%)	7 (10.4%)	6 (10%)	1.000[b]
Woman	114 (89.8%)	60 (89.6%)	54 (90%)	
Marital status				
Never married	12 (9.4%)	6 (9%)	6 (10%)	0.670[b]
Married	105 (82.7%)	56 (83.6%)	49 (81.7%)	
Divorced	2 (1.6%)	0 (0%)	2 (3.3%)	
Widowed	6 (4.7%)	3 (4.5%)	3 (5%)	
Education				
No grade completed	3 (2.4%)	2 (3%)	1 (1.7%)	0.427[b]
Elementary	1 (0.8%)	0 (0%)	1 (1.7%)	
High school	61 (48%)	36 (53.7%)	25 (41.7%)	
College	58 (45.7%)	28 (41.8%)	30 (50%)	
Higher	4 (3.1)	1 (1.5%)	3 (5%)	
Occupation				
Homemakers	93 (73.2%)	49 (73.1%)	44 (73.3%)	0.501[b]
Farmer: coconut	6 (4.7%)	1 (1.5%)	5 (8.3%)	
Farmer: rice	8 (6.3%)	5 (7.5%)	3 (5%)	
Fishery	15 (11.8%)	8 (11.9%)	7 (11.7%)	
Tourism-related	1 (0.8%)	1 (1.5%)	0 (0%)	
Midwife	2 (1.6%)	1 (1.5%)	1 (1.7%)	
Ethnicity				
Bicolana	7 (5.5%)	4 (6%)	3 (5%)	$p < 0.001$[b***]
Bisaya	28 (22%)	11(16.4%)	17 (28.3%)	
Ceuano	7 (5.5%)	5 (7.5%)	2 (3.3%)	
Cuyunon	33 (26%)	27 (40.3%)	6 (10%)	
Ilocano	5 (3.9%)	0 (0%)	5 (8.3%)	
Kagayan	3 (2.4%)	1 (1.5%)	2 (3.3%)	
Mindanao	2 (1.6%)	0 (0%)	2 (3.3%)	
Palawan	4 (3.1%)	0 (0%)	4 (6.7%)	
Tagalog	14 (11%)	6 (9%)	8 (13.3%)	

Table 2-2

Socio-demographic status of participants (microscopists) with respect to place of assignment (*Continued*)

Socio-demographic status	Total (N =127)	Northern Region (n = 67)	Southern Region (n = 60)	*p*-value
Ethnicity *(Continued)*				
Tagbanwa	5 (3.9%)	0 (0%)	5 (8.3%)	
Mixed	4 (3.1%)	2 (3%)	2 (3.3%)	
Other	4 (3.1%)	1 (1.5%)	3 (5%)	
Religion				
Catholic	86 (67.7%)	52 (77.6%)	34 (56.7%)	0.005[b**]
Christian except Catholic	35 (27.6%)	15 (22.4%)	20 (33.3%)	
Muslim	6 (4.7%)	0 (0%)	6 (10%)	
Household wealth[1]	**(Median = 3, SD = 1.62, *p* = 0.000[c***])**			
Low (≤3)	59 (46.5%)	19 (31.7%)	40 (59.7%)	0.002[a**]
High (>3)	68 (53.5%)	41 (68.3%)	27 (40.3%)	
Duration of work as microscopist (months)	**(Median = 104, SD =38.7, *p* = 0.002[d***])**			
Low (≤104)	71 (55.9%)	25 (41.7%)	46 (58.7%)	0.002[a**]
High (>104)	56 (44.1%)	35 (58.3%)	21 (31.3%)	
Distance from home to nearest health center (min)	**(Median = 15, SD = 26.3, *p* = 0.796[e])**			
Low (≤15)	73 (57.5%)	32 (53.4%)	41 (61.2%)	0.371[a]
High (>15)	54 (42.5%)	28 (46.7%)	26 (38.8%)	
Reason for becoming microscopist				
Voluntary	119 (93.7%)	60 (89.6%)	59 (98.3%)	0.065[b]
Nominee	8 (6.3%)	7 (10.4%)	1 (1.7%)	

[1] This scale scores from 1–8 points as follows, with 1 point each for the following: electricity, radio, television, refrigerator, bicycle, motorcycle, bike-car, and tin or cement wall. * Significant place of assignment difference ($0.01 \leq p < 0.05$), ** Significant place of assignment difference ($0.001 \leq p < 0.01$), *** Significant place of assignment difference ($p < 0.001$).

[a] Chi-square test, [b] Fisher's exact test, [c] Independent t-test, [d] Welch test, and [e] Mann–Whitney U test were conducted to clarify the place of assignment difference between the northern and the southern regions.

Table 3-1

Results of ability in malaria microscopy assessment indicators of participants (microscopists)

Assessment indicator	Microscopists (n = 127)		
	Mean	SD	Accuracy rate (%)
Ability in malaria microscopy (n = 4, maximum score = 1)	**0.78**	**0.07**	**-**
Preparation and documentation (n = 7, maximum score = 1)	**0.90**	**0.11**	**-**
• Preparation of microscope, needle, methanol and first-aid dressings, Giemsa staining solution, slides and object slides	-	-	98
• Check the expiry dates of all solutions	-	-	74
• Write the names of the patient on the slides	-	-	92
• Write the date on each slide	-	-	63
• Select the 5th finger of the left hand to take the peripheral blood sample	-	-	92
• Clean the finger with alcohol swab and allow it to air dry	-	-	98
• Record the results in the CHW register	-	-	98
Slide preparation and observation (n = 21, maximum score = 1)	**0.76**	**0.09**	**-**
• Take patient's peripheral blood	-	-	98
• Prepare samples immediately after taking the blood	-	-	96
• Use clean slide	-	-	100
• Put one droplet of blood on the slide	-	-	79
• Using cover glass, spread the blood so as to obtain a thin layer of blood cells	-	-	97
• The angle of the cover glass is 30 degrees	-	-	72
• Dry immediately	-	-	99
• Fix with methanol for 2 to 5 minutes	-	-	94
• Too much drying damages the staining	-	-	26
• Keep the slides fixed with methanol horizontally and add the staining solution	-	-	82
• When numerous samples are used, use staining bottle	-	-	94
• Staining time depends on the concentration of the dyes (usually between 10 and 30 minutes)	-	-	88
• Maximum staining time is 45 minutes and even if you wait longer, the color does not change	-	-	49

Table 3-2

Results of ability in malaria microscopy assessment indicators of participants (microscopists)

(Continued)

Assessment indicator	Microscopists (n = 127)		
	Mean	SD	Accuracy rate (%)
Slide preparation and observation (n = 21, maximum score = 1) ***(Continued)***	**0.76**	**0.09**	**-**
• Wash with buffer	-	-	21
• If insoluble pigments are present at the surface of the solutions, take them off carefully	-	-	38
• Adjust the intensity of the staining through washing time with the buffer	-	-	17
• After washing, take off water quickly and dry with cold air	-	-	100
• Observe with microscope	-	-	100
• Nuclei of malaria parasite inside red blood cells will be stained in red	-	-	81
• The cytoplasm of malaria parasite inside red blood cells will be stained in blue	-	-	94
• When malaria parasite is found inside red blood cells, check the type of protozoa	-	-	97
Safe handling and disposal (n =6, maximum score = 1)	**0.92**	**0.15**	**-**
• Put on a new pair of gloves when starting	-	-	67
• Do not touch patient blood	-	-	85
• Use a sterile lancet to puncture the patient finger	-	-	100
• Discard the needle in sharps bins immediately after usage	-	-	100
• Use a new needle for each patient	-	-	100
• Discard glove wrappers, alcohol swab, desiccant and cassette in non-sharps container	-	-	95
Knowledge on the morphology of infected RBCs (n = 27, maximum score = 1)			
Cited in Table 4	**0.55**	**0.12**	**-**

Table 4

Questionnaire on knowledge of the morphology of infected RBCs and answers of participants (microscopists)

Point of discrimination	*Plasmodium* species					
	P. falciparum		*P. vivax*		*P. malariae*	
	n	%	n	%	n	%
Size of infected red blood cells						
Do not know	3	2.4	3	2.4	3	2.4
Small	49	38.6	5	3.9	44	34.6
Normal	**74**	**58.3**	4	3.1	**74**	**58.3**
Big	1	0.8	**114**	**89.8**	6	4.7
Spots inside infected red blood cells						
Do not know	5	3.9	4	3.1	14	11
Maurer's dots	**104**	**81.9**	22	17.3	39	30.7
Schuffner's dots	16	12.6	**98**	**77.2**	20	15.7
Ziemann's dots	2	1.6	3	2.4	**53**	**41.7**
Several parasites inside the same red blood cell						
Do not know	5	3.9	10	7.9	11	8.7
Always	**72**	**56.7**	40	31.5	48	37.8
Sometimes	47	37	55	43.3	49	38.6
Never	3	2.4	**21**	**16.**	**18**	**14.**
Parasite stages in the red blood sample						
Do not know	8	6.3	7	5.5	20	15.7
Only the ring form	**59**	**46.5**	32	25.2	59	46.5
All stages	60	47.2	**87**	**68.5**	**44**	**34.6**
Big ring structures						
Do not know	8	6.3	7	5.5	9	7.1
Always	94	74.0	**88**	**69.3**	54	42.5
Never	**25**	**19.7**	32	25.2	**62**	**48.8**
Chromatin dots						
Do not know	9	7.1	9	7.1	13	10.2
Singular number	69	54.3	**82**	**64.6**	**82**	**64.6**
Plural number	**49**	**38.6**	35	27.6	30	23.6
Band structures						
Do not know	2	1.6	5	3.9	6	4.7
Always	48	37.8	34	26.8	**107**	**84.3**
Never	**77**	**60.6**	**88**	**69.3**	14	11.0
Gametocytes in crescent form						
Do not know	2	1.6	5	3.9	9	7.1
Always	**118**	**92.9**	9	7.1	19	15.0
Never	7	5.5	**113**	**89**	**99**	**78.0**

Correct answers are indicated with bold typeface.

Table 5

Factors associated with community awareness-raising activities for malaria prevention of participants (microscopists)

Variables	r	Pearson's correlation *p*-value
Socio-demographic status		
Annual parasite index	0.09	0.303
Age of microscopist	−0.02	0.856
Household wealth	0.70	0.435
Duration of work as microscopist	−0.12	0.197
Distance from home to nearest health center	−0.19	0.035*
Service quality	**0.21**	**0.035***
Active detection	0.17	0.064
Diagnosis and treatment	0.19	0.030*
Prescription of anti-malarials	0.01	0.883
Follow-up	0.11	0.204
Self-implemented preventive measures against malaria	**0.16**	**0.067**
Ability in malaria microscopy	**0.27**	**0.003****
Preparation and documentation	0.26	0.003**
Slide preparation and observation	0.17	0.055
Knowledge on the morphology of infected RBCs	0.16	0.073
Safe handling	0.09	0.343
Knowledge on malaria	**0.00**	**0.980**
Malaria symptoms	0.09	0.328
Malaria transmission	−0.19	0.034*
Vector species	0.04	0.679
Vector's most active time	0.25	0.004**
Job satisfaction		
General job satisfaction	**0.19**	**0.031***
Intrinsic job satisfaction	0.15	0.095
Extrinsic job satisfaction	0.20	0.027*

* Significant difference ($0.01 \leq p < 0.05$), ** Significant difference ($0.001 \leq p < 0.01$), *** Significant difference ($p < 0.001$).

Table 6

Correlation matrix among variables of participants (microscopists)

Variables	1	2	3	4	5	6	7	8
1. Community awareness-raising activities for malaria prevention	1							
2. Place of assignment (1 = northern region, 2 = southern region)	0.05	1						
3. Annual parasite index	0.09	0.76**	1					
4. Service quality	0.21*	−0.02	0.05	1				
5. Knowledge on malaria	0.00	−0.05	−0.13	0.17*	1			
6. Self-implemented preventive measures against malaria	0.16	0.31**	0.19*	0.08	0.16	1		
7. Ability in malaria microscopy	0.27**	−0.70	−0.06	0.31***	0.09	0.05	1	
8. General job satisfaction	0.19*	0.29**	0.32**	0.21*	0.01	0.20*	0.24**	1
Mean	2.59	-	7.11	3.26	3.52	4.19	0.78	84.00
SD	0.19	-	8.19	0.58	0.52	0.89	0.69	8.77
Skewness	1.67	-	1.15	−0.97	−1.05	−0.76	−0.50	−0.31
Cronbach's α	0.733	-	-	0.581	0.545	0.747	0.667	0.857

* Significant difference ($0.01 \leq p < 0.05$), ** Significant difference ($0.001 \leq p < 0.01$), *** Significant difference ($p < 0$ .001).

Table 7

Nominal variables of participants with respect to place of residence of participants (ex-patients)

Nominal Variables	Total (N = 141)	Northern Region (n = 37)	Central Region (n = 66)	Southern Region (n = 38)	*p*-value
Gender					
Man	29 (20.6%)	11 (28.9%)	12 (18.2%)	6 (16.2%)	0.318[1]
Woman	112 (79.4%)	27 (71.1%)	54 (81.8%)	31 (83.8%)	
Marital status					
Never married	11 (7.6%)	4 (10.5%)	5 (7.6%)	2 (5.4%)	0.323[2]
Married	122 (86.5%)	34 (89.5%)	54 (81.8%)	34 (91.9%)	
Divorced	3 (2.1%)	0 (0.0%)	3 (4.5%)	0 (0.0%)	
Widowed	5 (3.5%)	0 (0.0%)	4 (6.1%)	1 (2.7%)	
Religion					
Catholic	88 (62.4%)	28 (73.7%)	51 (77.3%)	9 (24.3%)	$p < 0.001$[2***]
Christian except Catholic	43 (30.5%)	7 (18.4%)	14 (21.2%)	22 (59.5%)	
Muslim	3 (2.1%)	1 (2.6%)	0 (0.0%)	2 (5.4%)	
No religion	7 (5.0%)	2 (5.3%)	1 (1.5%)	4 (10.8%)	
Ethnicity					
Tagalog	38 (27.0%)	8 (21.1%)	25 (37.9%)	5 (13.5%)	0.003[1**]
Tagalog and other ethnics	61 (43.3%)	18 (47.4%)	30 (45.5%)	13 (35.1%)	
Other	42 (29.8%)	12 (31.6%)	11 (16.7%)	19 (51.4%)	
Educational status					
No grade completed	12 (8.5%)	1 (2.6%)	2 (3.0%)	9 (24.3%)	0.001[2**]
Elementary grade	52 (36.9%)	9 (23.7%)	26 (39.4%)	17 (45.9%)	
High school	62 (44.0%)	21 (55.3%)	32 (48.5%)	9 (24.3%)	
College	13 (6.0%)	6 (15.8%)	5 (7.6%)	2 (5.4%)	
Higher	1 (0.7%)	0 (0.0%)	1 (1.5%)	0 (0.0%)	
Occupation					
Homemakers	59 (41.8%)	20 (52.6%)	26 (39.4%)	13 (35.1%)	0.002[1**]
Farmer	33 (23.4%)	10 (26.3%)	8 (12.1%)	15 (40.5%)	
Other	49 (34.8%)	8 (21.1%)	32 (48.5%)	9 (24.3%)	

[1] Chi-square test between places of residence (northern region, central region, and southern region).

[2] Fisher's exact test between places of residence.* Significant difference (0.01 ce$p < 0.05$), ** Significant difference (0.001 en$p < 0.01$), *** Significant difference ($p < 0.001$).

Table 8

Continuous variables of participants with respect to place of residence of participants (ex-patients)

Continuous Variables	Total Mean (SD)	Northern Region Mean (SD)	Central Region Mean (SD)	Southern Region Mean (SD)	ANOVA[1] (p-value)
Socio-economic status					
Age	39.3 (13.2)	38.0 (11.4)	41.4 (13.5)	37.0 (14.2)	0.228
Number of people in household	5.5 (2.0)	5.6 (1.8)	5.4 (2.2)	5.5 (1.9)	0.854
Number of children	3.0 (1.8)	3.3 (2.0)	2.8 (1.7)	3.1 (2.0)	0.357
Household wealth[2]	1.5 (1.7)	1.9 (1.6)	1.4 (1.5)	1.3 (1.9)	0.237
Self-implemented preventive measures against malaria	19.2 (5.2)	19.1 (5.2)	20.0 (5.1)	17.9 (5.1)	0.125
Knowledge on malaria					
Malaria symptoms	0.67 (0.23)	0.68 (0.25)	0.70 (0.19)	0.62 (0.27)	0.182
Malaria transmission	0.87 (0.27)	0.79 (0.31)[a]	0.96 (0.14)[a, b]	0.78 (0.36)[b]	$p < 0.001$***
Vector species	0.42 (0.48)	0.52 (0.48)	0.34 (0.46)	0.46 (0.50)	0.142
Vector's most active time	0.60 (0.49)	0.68 (0.47)	0.55 (0.50)	0.62 (0.49)	0.371
Satisfaction with microscopists	4.6 (0.9)	4.9 (0.4)[c]	4.5 (1.0)[c]	4.5 (1.0)	0.037*

[1] ANOVA between places of residence (northern region, central region, and southern region).

[2] This scale scores from 1 - 8 points, with 1 point each for the following: electricity, radio, television, refrigerator, bicycle, motorcycle, bike-car, and tin or cement wall. * Significant difference ($0.01 \leq p < 0.05$), ** Significant difference ($0.001 \leq p < 0.01$), *** Significant difference ($p < 0$ .001). [a, b, and c] Indicate the combination of two-places of residence that were significantly different by Tukey-Kramer test.

Table 9

Self-implemented preventive measures against malaria of participants (ex-patients)

Self-implemented preventive measures against malaria	Never %	Rarely %	Sometimes %	Mostly %	Always %
Sleep under bed nets at home	0	0	0	0	100
Return home before dawn	12.0	1.5	9.0	16.5	60.9
Wear long-sleeved shirts/pants	8.3	2.3	19.5	9.0	60.9
Refrain from going to the forest	25.6	12.8	26.3	5.3	30.1
Bring hammock nets to the forest	51.9	28.6	4.5	0	15.0

Table 10

Participation in awareness-raising activates for malaria prevention of participants (ex-patients)

Source for information	No (%)	Yes (%)
Microscopists	19.1	80.9
Information education community	91.5	8.5
School education	97.2	2.8
Book/magazine	97.9	2.1
TV	98.6	1.4
Parents	99.3	0.7
Other	87.9	12.1

Table 11

Correlation matrix among variables of participants (ex-patients)

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Self-implemented preventive measures against malaria	1						
2. Ethnicity (Tagalog)	0.20*	1					
3. Knowledge on malaria transmission	0.48***	0.22**	1				
4. Knowledge on malaria species	0.28**	-0.02	0.21*	1			
5. Knowledge on vector's most active time	0.38***	0.01	0.24**	0.13	1		
6. Awareness-raising activities for malaria prevention by microscopist	0.46***	0.11	0.19*	-0.10	-0.01	1	
7. Satisfaction with microscopists	0.23**	-0.05	-0.01	-0.10	-0.01	0.42	1

* Significant difference ($0.01 \leq p < 0.05$), ** Significant difference ($0.001 \leq p < 0.01$), *** Significant difference ($p < 0.001$).

Figures

Figure 1

Distribution of confirmed malaria cases per municipalities (per 1,000 population)

(Made by author based on the data of Provincial Health Report 2009)

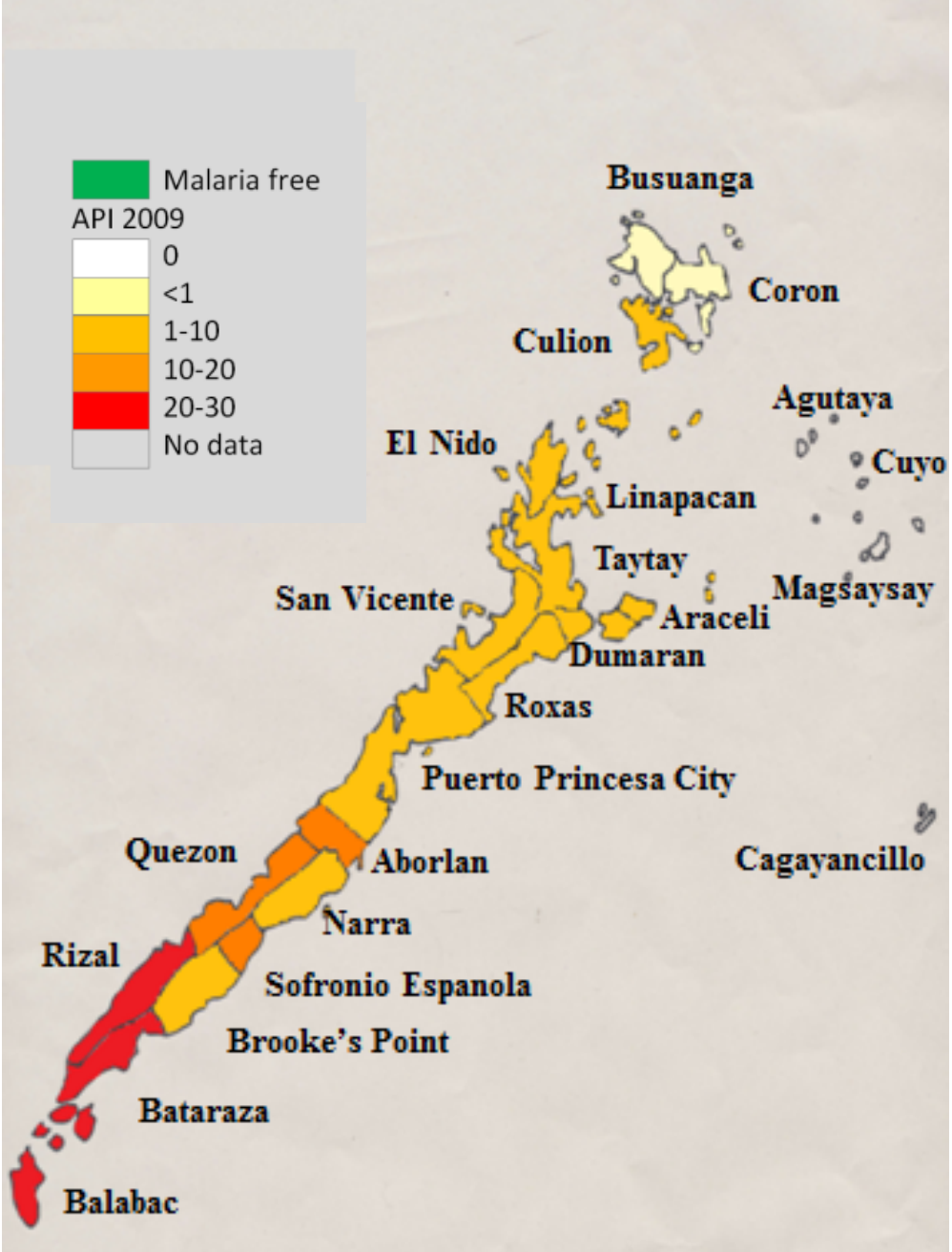
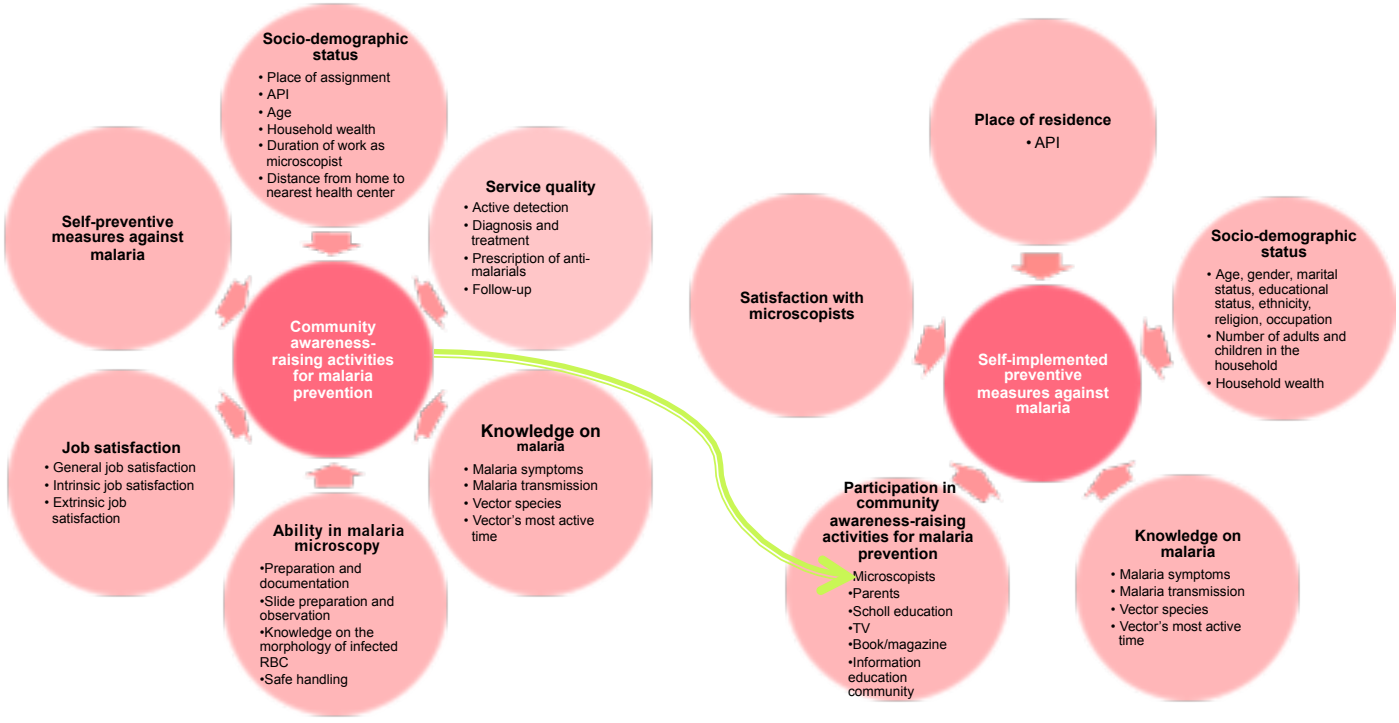


Figure 2

Conceptual framework of Study 1 and 2



Study 1 hypothesize that an association exists between microscopists' "community awareness-raising activities for malaria prevention" and the following multi-directional variables: "socio-demographic status," "service quality," "knowledge on malaria," "ability in malaria microscopy," "job satisfaction," and "self-preventive measures against malaria." Sub-variables of the each variable are in the circles of the conceptual framework. API, annual parasite index.

Study 2 hypothesize that an association exists between ex-patients' "self-implemented preventive measures against malaria" and the following multi-directional variables: "place of residence," socio-demographic status," "knowledge on malaria," "participation in community awareness-raising activities for malaria prevention," and "satisfaction with microscopists." Sub-variables of each variable are in the circles of the conceptual framework.

Figure 3

Data collection of Study 1

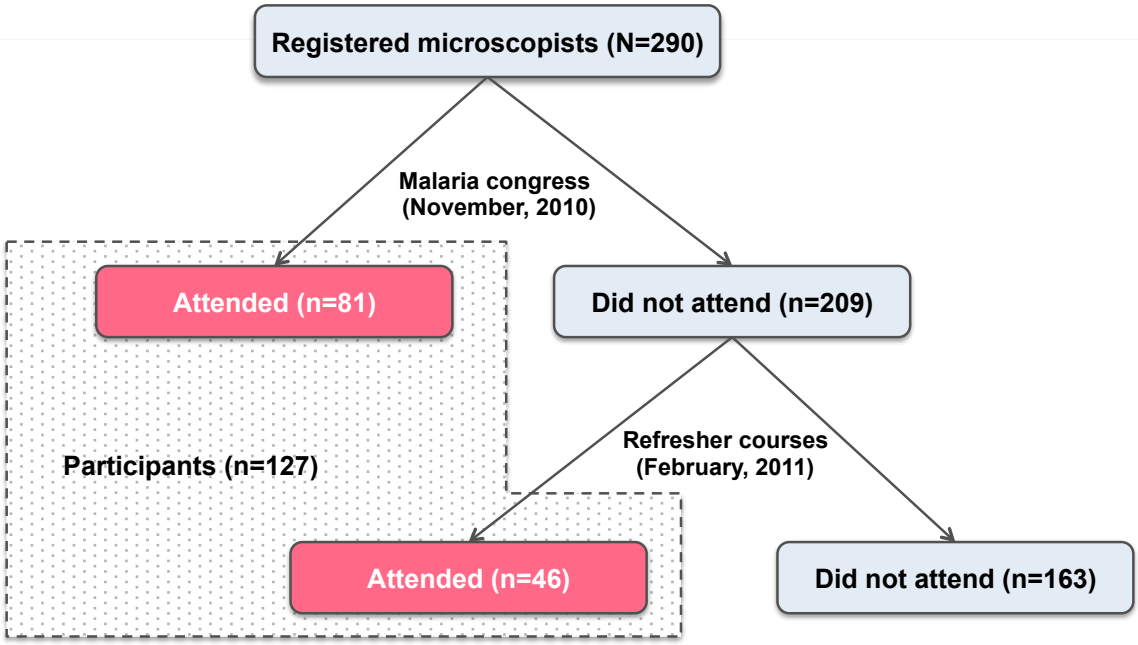
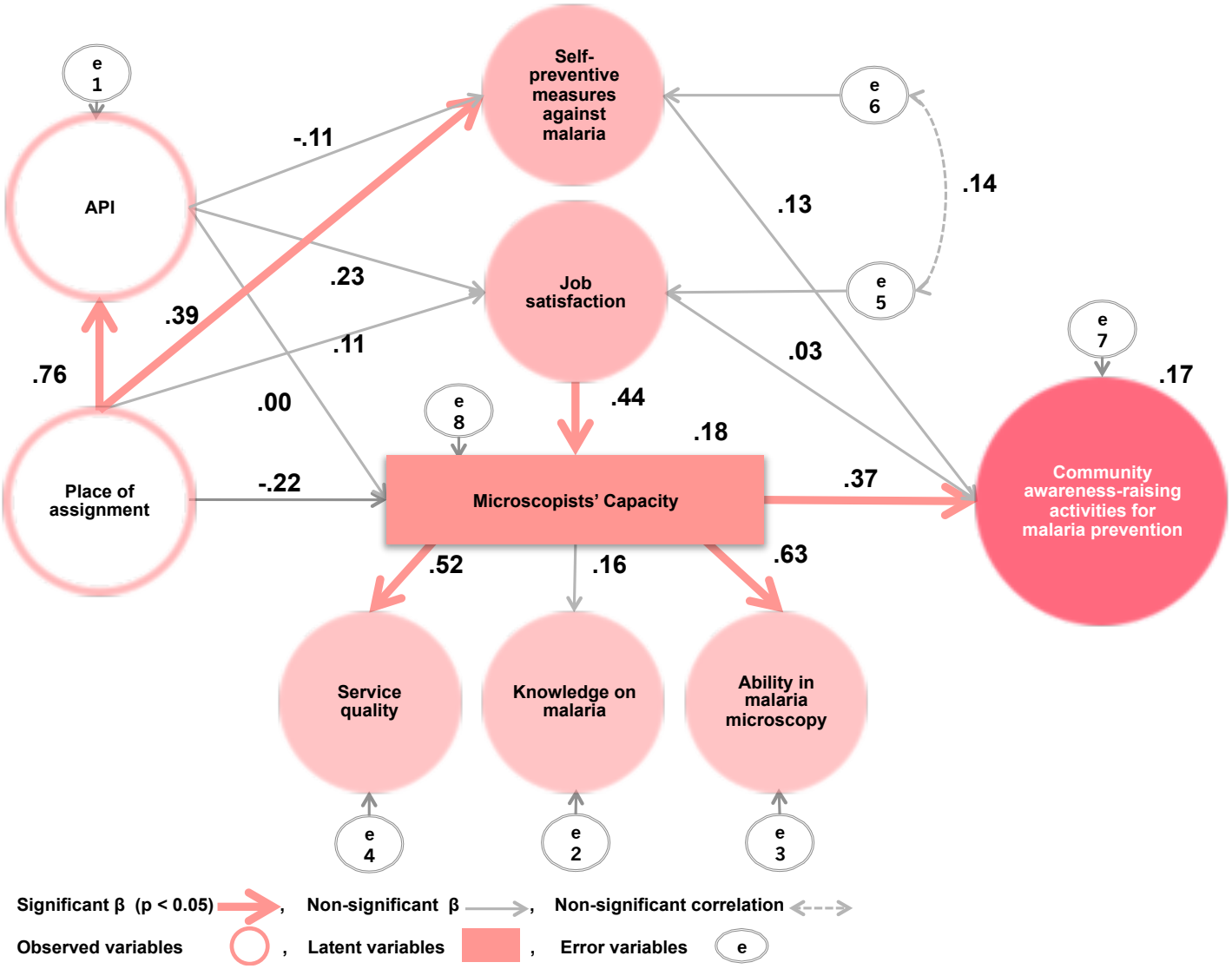


Figure 4

Factors associated with community awareness-raising activities for malaria prevention



CMIN = 12.667, df = 13, CFI = 1.000, RMSEA = 0.000. Place of assignment is calculated as follows: the northern region is "1" and the southern region is "2." API, annual parasite index.

Figure 5

Data collection of Study 2

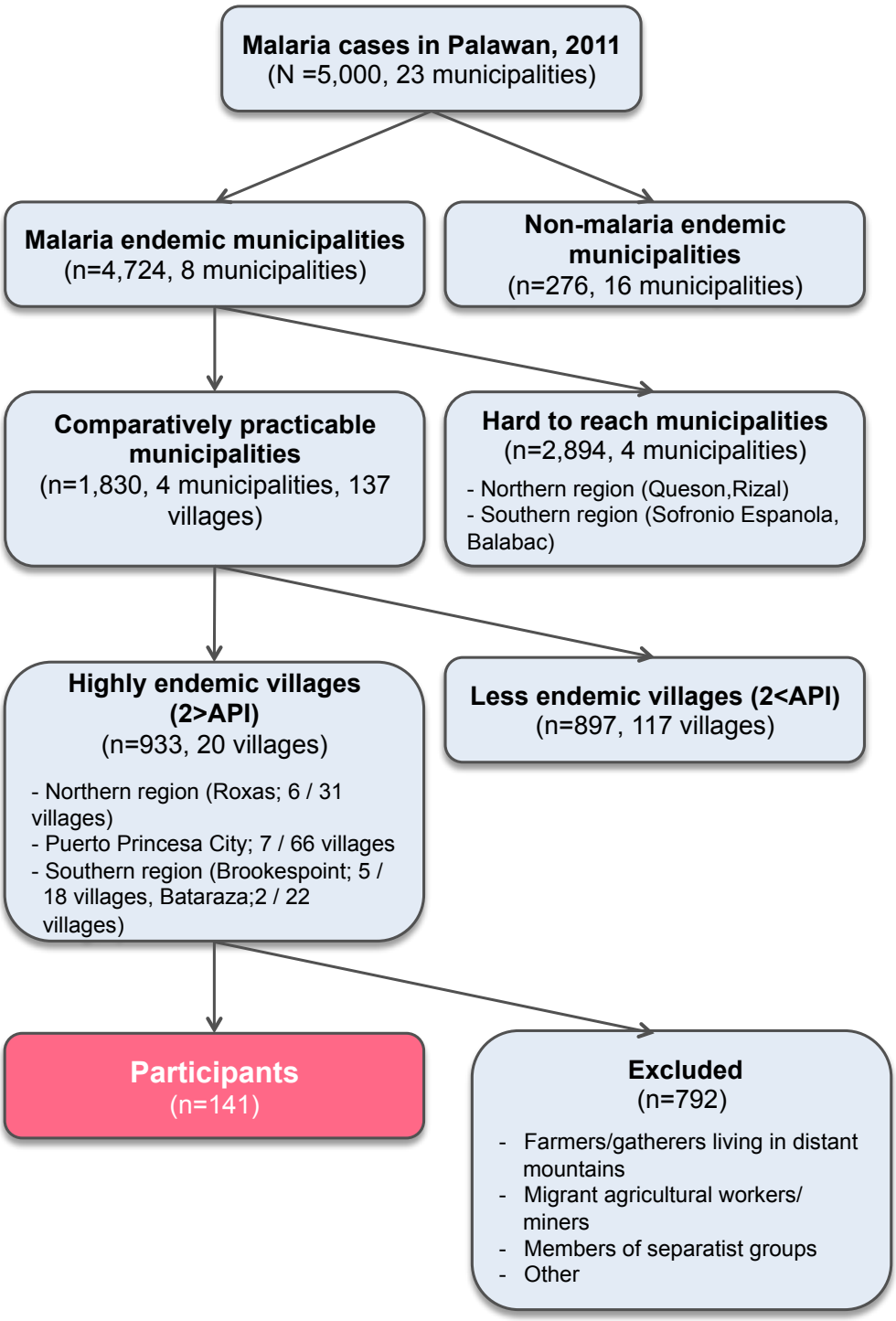
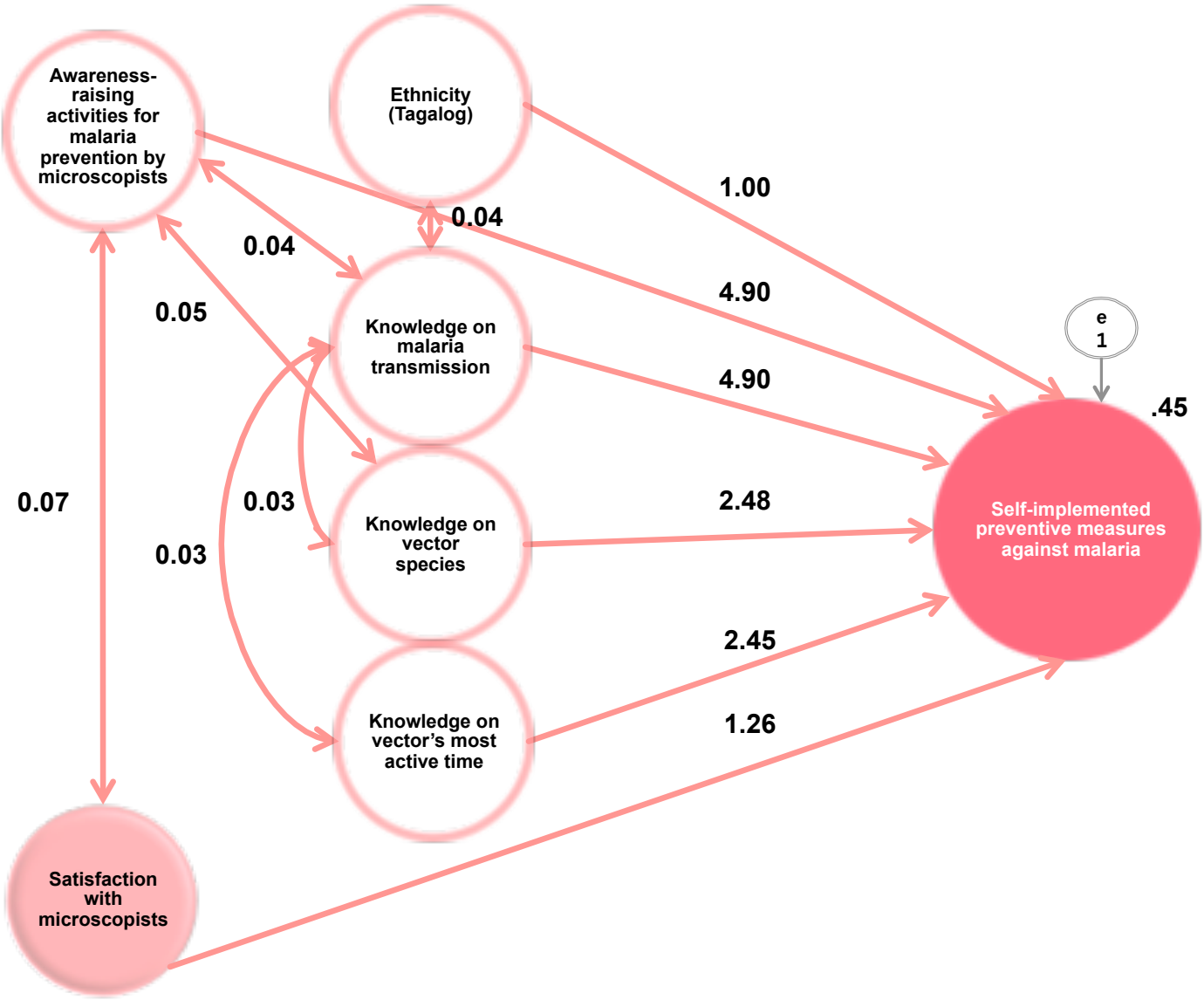


Figure 6

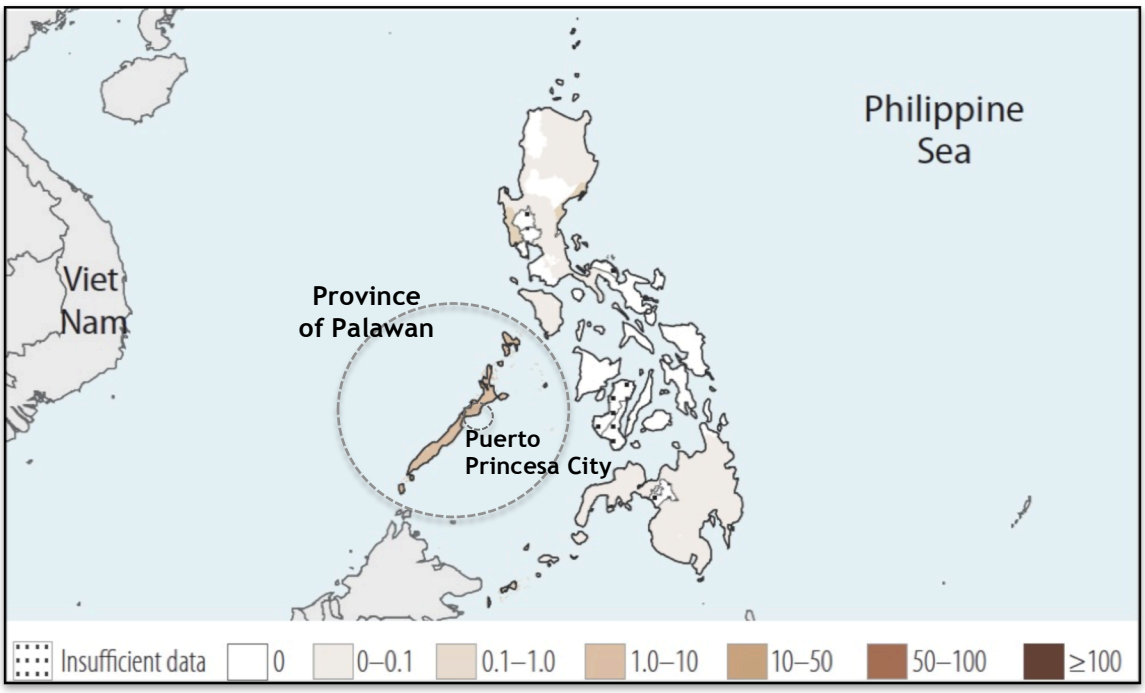
Factors associated with self-implemented preventive measures against malaria



CMIN = 5.842, df = 10, CFI = 1.000, RMSEA = 0.000. The circles represent the observed variables. All relations and correlations are significant ($p < 0.05$). Ethnicity is calculated as follows: Tagalog is "3," amalgamation of Tagalog is "2," and other is "3." The pass-coefficient between "ethnicity" and "self-implemented preventive measures against malaria" was set up as "1."

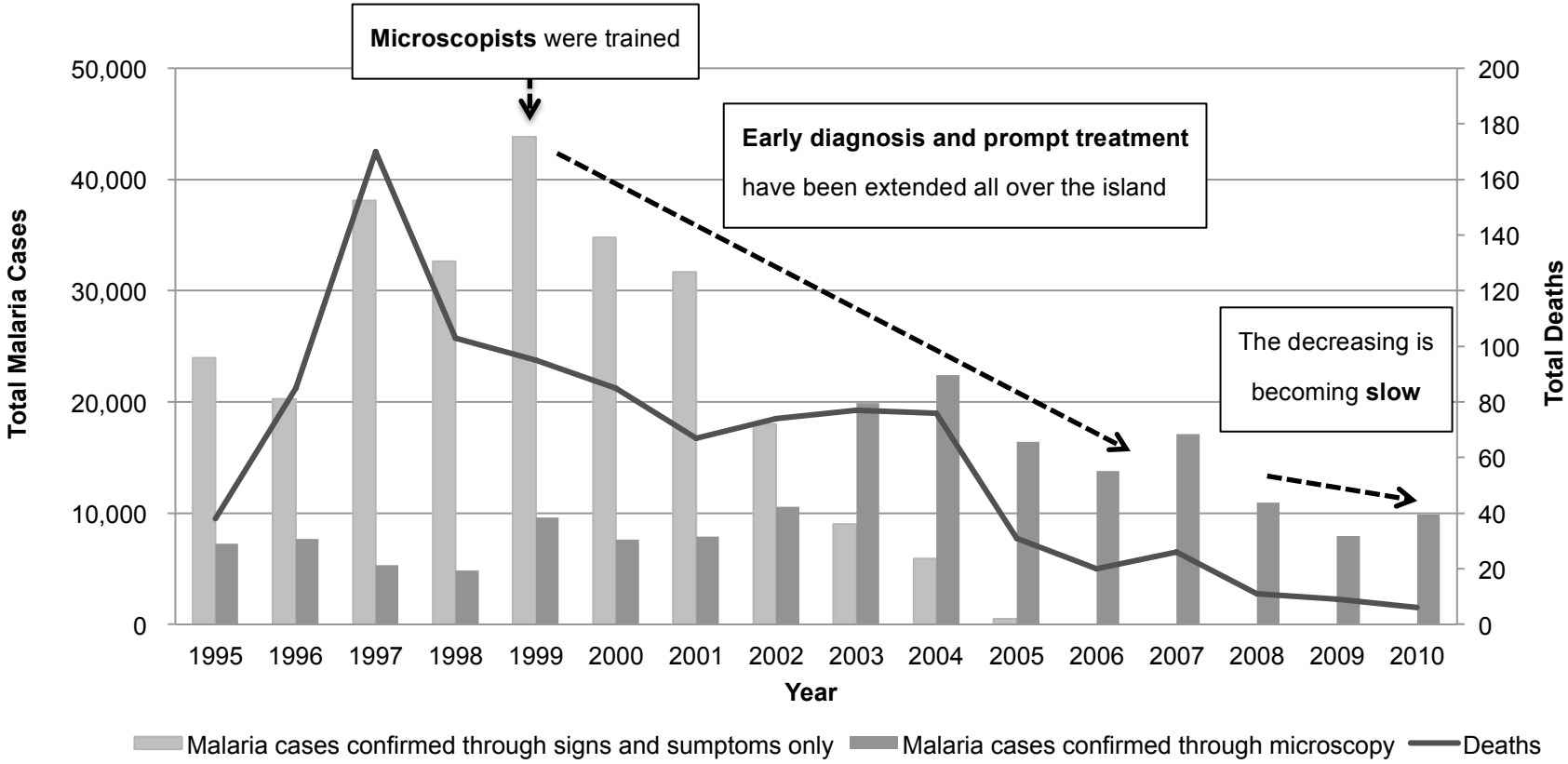
Appendices

Appendix 1: Distribution of confirmed malaria cases per 1,000 populations in the Philippines (2012)



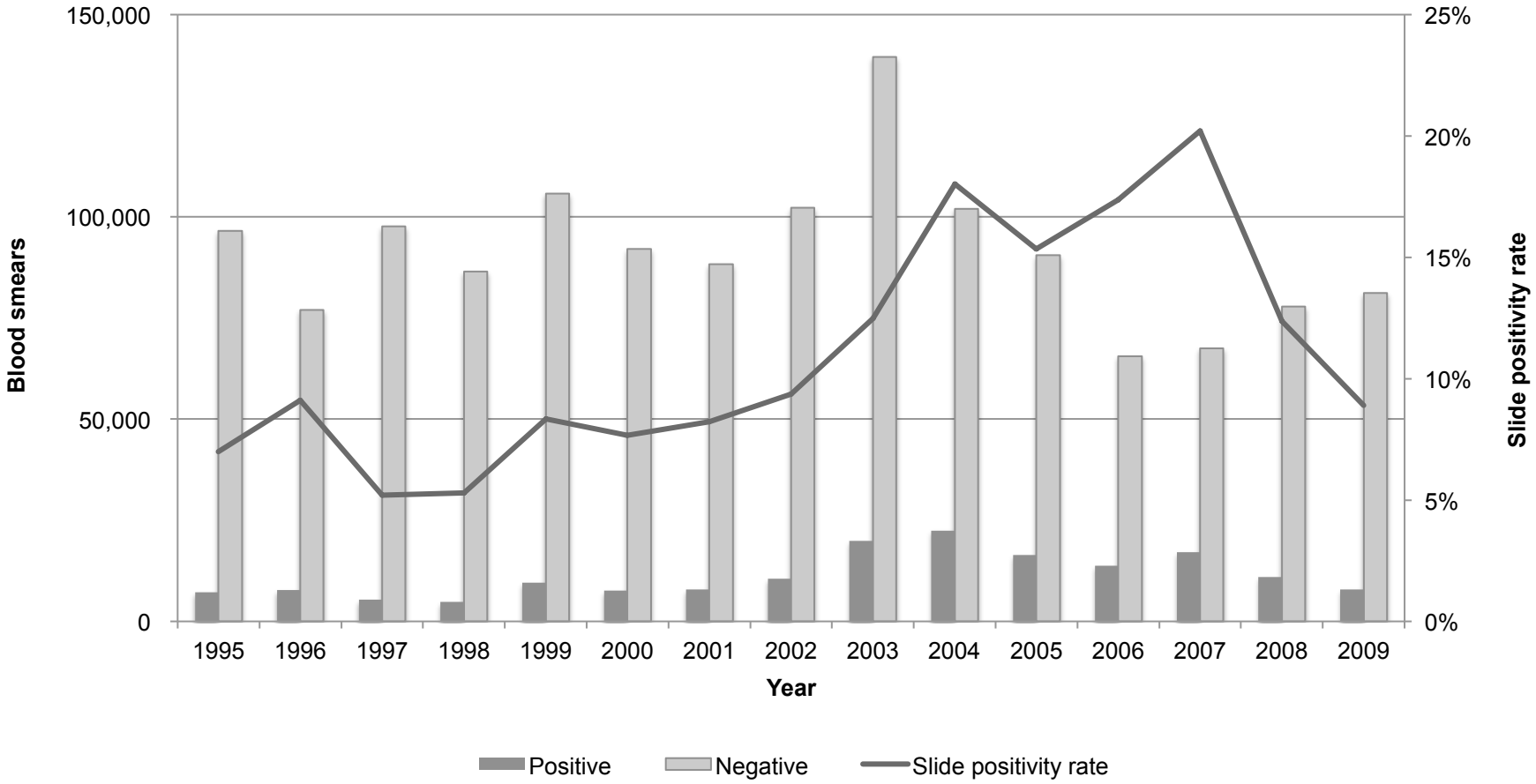
World Malaria Report 2012, WHO.

Appendix 2: Malaria trends of Palawan (1995-2010)



Made by author referring the data of Provincial Health Report, 1995-2010.

Appendix 3: Trend of slide positivity rate of blood smears (1995-2009)



Made by author referring the data of Provincial Health Report, 1995-2009.

Appendix 4: Population and distribution of confirmed malaria cases per 1,000 population and age group of each municipality in Palawan (2009)

Municipalities	MICROSCOPISTS					API
	Total	Confirmed cases by age group				
		<5		5		
	n	n	%	n	%	
TOTAL	**7,606**	**1,313**	**17.3**	**6,293**	**82.7**	**7.58**
Northern Region						
Araceli	**488**	**54**	**11.1**	**434**	**88.9**	**1.15**
Busuanga	15	0	0.0	15	100	1.00
Coron	9	0	0.0	9	100	0.12
Culion	12	1	8.3	11	91.7	0.61
Dumaran	43	6	14.0	37	86.0	2.38
El Nido	55	7	12.7	48	87.3	1.24
Linapacan	75	13	17.3	62	82.7	1.72
Roxas	11	0	0	11	100	1.84
San Vincente	85	7	8.2	78	91.8	1.09
Taytay	48	10	20.8	38	79.2	1.03
	135	10	7.4	125	92.6	1.19
Central Region						
Puerto Princesa City	**880**	**74**	**8.4**	**806**	**91.6**	**3.80**
Southern Region	**6,238**	**1,185**	**19.0**	**5,053**	**81.0**	**17.47**
Aborlan	434	37	8.5	397	91.5	15.02
Balabac	817	98	12.0	719	88.0	23.22
Bataraza	1,335	327	24.5	1,008	75.5	23.95
Brookespoint	304	58	19.1	246	80.9	6.35
Espanola	515	133	25.8	382	74.2	10.81
Narra	309	38	12.3	271	87.7	4.41
Quezon	805	123	15.3	682	84.7	17.79
Rizal	1,719	371	21.6	1,348	78.4	48.30

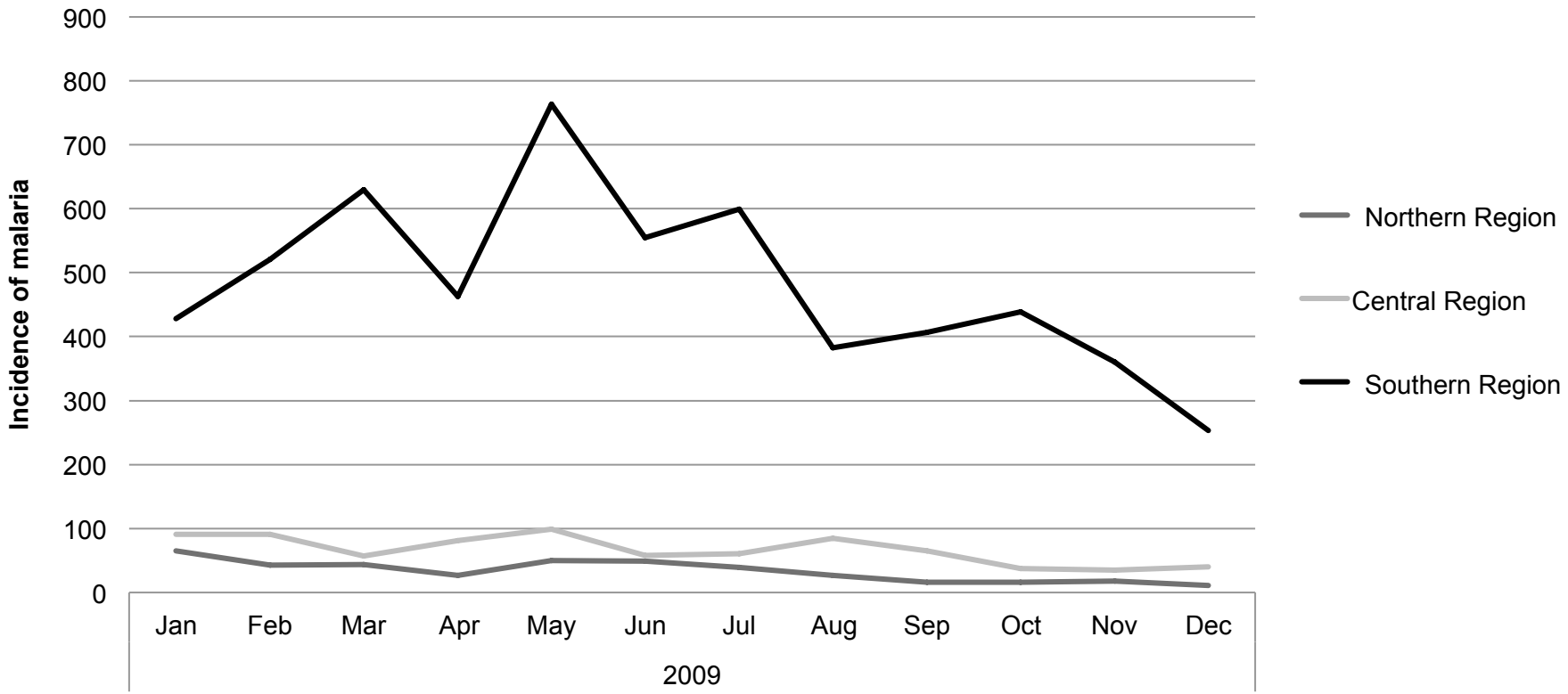
Data of population is from Census of Population and Housing, 2000. Data of malaria is from Provincial Health Report 2009.

Appendix 5: Confirmed cases by species per region and municipality (2009)

Municipalities	MICROSCOPISTS								
	Confirmed cases by species								
	P.f.		*P.v.*		*P.m.*		mixed		Total
	n	Total %	n	Total %	n	Total %	n	Total %	n
TOTAL	**5,558**	**73.1**	**1,842**	**24.2**	**133**	**1.7**	**73**	**1.0**	**7,606**
Norther Region	**322**	**66.0**	**162**	**33.2**	**3**	**0.6**	**1**	**0.2**	**488**
Araceli	14	93.3	1	6.7	0	0	0	0	15
Busuanga	4	44.4	5	55.6	0	0	0	0	9
Coron	12	100	0	0	0	0	0	0	12
Culion	42	97.7	1	2.3	0	0	0	0	43
Dumaran	40	72.7	14	25.5	0	0	1	1	55
El Nido	58	77.3	17	22.7	0	0	0	0	75
Linapacan	8	72.7	3	27.3	0	0	0	0	11
Roxas	46	54.1	38	44.7	1	1.2		0	85
San Vincente	26	54.2	22	45.8	0	0.0	0	0	48
Taytay	72	53.3	61	45.2	2	1.5	0	0	135
Central Region									
Puerto princesa City	**559**	**63.5**	**299**	**34.0**	**20**	**2.3**	**2**	**0.2**	**880**
Southern Region	**4,677**	**75.0**	**1,381**	**22.1**	**110**	**1.8**	**70**	**1.1**	**6,238**
Aborlan	294	67.7	134	30.9	0	0	6	1.4	434
Balabac	629	77.0	167	20.4	2	0.2	19	2.3	817
Bataraza	1,093	81.9	211	15.8	22	1.6	9	0.7	1,335
Brookespoint	219	72.0	71	23.4	6	2.0	8	2.6	304
Espanola	441	85.6	63	12.2	9	1.7	2	0.4	515
Narra	239	77.3	59	19.1	9	2.9	2	0.6	309
Quezon	576	71.6	204	25.3	24	3.0	1	0.1	805
Rizal	1,186	69.0	472	27.5	38	2.21	23	1.3	1,719

Data of malaria is from Provincial Health Report 2009.

Appendix 6: Monthly incidence of malaria per each region in Palawan (2009)



Data about malaria is from Provincial Health Report 2009.

Appendix 7. Trend of leading causes of morbidity from 2005 to 2009 at Palawan

Causes of morbidity	2005			2006			2007			2008			2009		
	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]
URTI/ARI[2]	**1st**	28,011	4,303	**1st**	27,959	4,201	**1st**	19,217	2,392	**1st**	24,030	3,457	**1st**	38,857	4,964
Influenza	**2nd**	17,085	2,625	**2nd**	16,091	2,418	**2nd**	16,266	1,477	**2nd**	16,719	2,405	**2nd**	13,528	1,728
Malaria[3]	**3rd**	10,334	1,588	**3rd**	12,640	1,899	**3rd**	10,048	973	**5th**	5,865	844	**4th**	6,558	838
Diarrhea	**4th**	7,038	1,081	**4th**	8,932	1,342	**4th**	6,617	831	**4th**	7,061	1,016	**7th**	3,655	467
Bronchitis	**5th**	4,800	737	**5th**	7,908	1,188	**6th**	4,382	521	**3rd**	8,303	1,195	**6th**	3,738	477
Hypertension	**6th**	3,317	510	**6th**	4,843	728	**7th**	3,540	502	**7th**	3,000	432	**3rd**	7,335	937
Urinary Tract Infection	**7th**	2,700	415	**7th**	2,856	429	**8th**	3,417	185	**6th**	5,671	816	**5th**	4,483	573
Pneumonia	**8th**	2,260	347	**8th**	1,470	221	**5th**	5,652	644	**8th**	2,994	431	**10th**	2,471	316
Anemia	**9th**	1,447	222	**10th**	858	129									
Pulmonary TB	**10th**	1,029	158	**9th**	949	143	**10th**	971	127						
Skin Disease							**9th**	1,261	143						
Gastriris										**9th**	1,402	202	**9th**	2,066	264
Accidents/Wounds /Injuries										**10th**	1,130	163	**8th**	2,834	362

[1] Per 100,000 population. [2] URTI = Upper Respiratory tract Infections, ARI = Acute Respiratory infection. [3] Number dose not much with other appendixes because of different way of data collection. This collection was only made in provincial and private hospitals.

The table was made by author based on Annual Health Report of the Province of Palawan (2005 to 2009).

Appendix 8. Trend of leading causes of mortality from 2005 to 2009 at Palawan

Causes of morbidity	2005			2006			2007			2008			2009		
	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]	Top 10	n	Rate[1]
Pneumonia	**1st**	239	37.0	**1st**	224	33.7	**1st**	313	46.0	**1st**	285	41.0	**1st**	337	43.1
Hypertension	**2nd**	155	24.0	**5th**	101	15.2	**7th**	78	11.5				**4th**	108	13.8
Pulmonary TB	**3rd**	128	20.0	**3rd**	122	18.3	**4th**	163	24.0	**4th**	97	14.0	**6th**	99	12.7
Unspecified natural cause	**4th**	123	19.0	**9th**	60	9.0	**3rd**	181	26.7	**10th**	57	8.2			
Cancer	**5th**	105	16.0	**4th**	105	15.7	**5th**	137	20.1	**2nd**	107	15.4	**2nd**	123	15.8
Diarrhea	**6th**	95	15.0	**8th**	63	9.5	**6th**	125	18.4				**8th**	72	9.2
Cardio vascular accidents	**7th**	83	13.0	**2nd**	147	22.1				**8th**	59	8.5			
Accidents/Wounds/Injuries	**8th**	67	10.0												
Still birth	**9th**	56	9.0							**6th**	63	9.1			
Myocardial Infection	**10th**	54	8.0				**8th**	76	11.2						
Congestive heart failure				**6th**	87	13.1									
Renal failure				**7th**	80	12.0	**9th**	72	10.6	**7th**	63	9.1	**7th**	77	9.8
Peptic ulcer							**10th**	54	8.0						
Cardiovascular disease							**2nd**	295	43.4	**3rd**	103	14.9			
Cerebrovascular accident										**5th**	85	12.2	**3rd**	111	14.2
Myocardial infection										**9th**	59	8.5	**9th**	69	8.8
Hear disease													**5th**	101	12.9
Diabetes mellitus													**10th**	64	8.2

[1] Per 100,000 population.

The table was made by author based on Annual Health Report of the Province of Palawan (2005 to 2009).

Appendix 9: Informed consent sheet for microscopists

Information Sheet for Participants

(Microscopists-level)

This explains the research entitled **"Malaria Control and Health System Strengthening; The Roles of Microscopists in Palawan Island, Philippines".** Please read this or we will read it for you so that you are fully aware of the research process.

Objective of this study: To obtain information from you about your activity and perception as Microscopists.
Research procedure: If you agree to participate in this study, we will take about 60 minutes of your time. During the time, we will ask you questions about your activity and perception as Microscopist.
Risks, Discomforts, and Inconveniences: There is no risk for participating in this study.
Benefits: The information obtained from you will help us to understand this topic. It can be also used to develop an effective strategy to promote health in the Philippines.
Privacy and Confidentiality: All the information will remain strictly confidential and your answer will not be identified.
Volunteer agreement: Your participation is completely voluntary. You can withdraw from answering questions at any time without any penalty. Also, you are not obliged to answer any questions you do not want to.

You may ask any questions about the study at this time. If you are willing to participate in this study, please sign your name on the informed consent form.

Thank you very much for your kind cooperation.

If you have any question, please ask the questioner.

Principal investigator: Masamine Jimba (The University of Tokyo),
Shigeyuki KANO (International Medical Center of Japan),
Emilie MATSUMOTO (The University of Tokyo)

Appendix 10: Informed consent sheet for ex-malaria-patients

Information Sheet for Participants

(Community-level)

This explains the research entitled **"Malaria Control and Health System Strengthening; The Roles of Microscopists in Palawan Island, Philippines".** Please read this or we will read it for you so that you are fully aware of the research process.

Objective of this study: To obtain information from the community about your activity and perception about Malaria.
Research procedure: If you agree to participate in this study, we will take about 60 minutes of your time. During the time, we will ask you questions about your activity and perception about Malaria.
Risks, Discomforts, and Inconveniences: There is no risk for participating in this study.
Benefits: The information obtained from you will help us to understand this topic. It can be also used to develop an effective strategy to promote health in the Philippines.
Privacy and Confidentiality: All the information will remain strictly confidential and your answer will not be identified.
Volunteer agreement: Your participation is completely voluntary. You can withdraw from answering questions at any time without any penalty. Also, you are not obliged to answer any questions you do not want to.

You may ask any questions about the study at this time. If you are willing to participate in this study, please sign your name on the informed consent form.

Thank you very much for your kind cooperation.

If you have any question, please ask the questioner.

Principal investigator: Masamine Jimba (The University of Tokyo),
Shigeyuki KANO (International Medical Center of Japan),
Emilie MATSUMOTO (The University of Tokyo)

Appendix 11: Certificate of consent sheet for both microscopists and ex-malaria patients

Informed Consent Form for Participants

Study title: "Malaria Control and Health System Strengthening;
The Roles of Microscopists in Palawan Island, the Philippines"

Principal investigator: Masamine Jimba (The University of Tokyo),
Shigeyuki KANO (International Medical Center of Japan),
Emilie MATSUMOTO (The University of Tokyo)

To the Dean of the Graduate School of Medicine, The University of Tokyo

I, _____ (please write your name here)**,** after reading and having explained to me the contents of this study, understand what is expected to me as a participant and agree with participating in the study.

I understand:
1. The purpose and procedures of the study,
2. That I will not be placed under any harm or discomfort,
3. That I can withdraw from the study in any time without giving a reason,
4. That any information I provide will be recorded anonymously and the data will be destroyed at the end of the study.

Signature / Name: _____

Date: **(DAY)** **(MONTH)** **/ 2010**

I, the researcher, certify that I have explained to the above participant about the contents and procedure of the study according to the attached information page. I have covered all points listed on the consent form above.

Signature / Name: _____

Date: **(DAY)** **(MONTH)** **/ 2010**

Appendix 12: Questionnaire for microscopists (English)

CODE _

Questionnaire on Malaria (Microscopists-level)

Date

■ Day / Month / Year

■ Starting (time) ■ Ending (time) ➡ Total

: : _____

Section 1: Socio-demographic characteristics

Q1 Where do you live? **Barangay** _____

Q2 When did you become Microscopists? **Month**_____ **Year**_____

Q3 Age _____(YEARS OLD)

Q4 Gender ☐Man / ☐Woman

Q5 Marital status (Choose **one**) ☐Never married / ☐Married / ☐Divorced / ☐Widowed

Q6 Distance from home to nearest Health Center _____minutes by ☐Walk /☐Other (specify) _____

Q7 Religion (Choose **one**) ☐Catholic / ☐Protestant / ☐4 Square / ☐LRC / ☐Muslim
☐Traditional animism / ☐Other (specify)_____

Q8 Ethnicity (Choose **one**)
☐Cebuano / ☐Bisaya (binisaya) / ☐Cuyunon (Cuyunan) / ☐Bicolana / ☐Mindanao
☐Kagayanan / ☐Tagalog / ☐Tagbanwa / ☐Palawan(Pinalawon, Palawanon) / ☐Other (specify)_____

Q9 Education status (Choose **one**)
☐ No grade completed / ☐Elementary Grade / ☐High school Year / ☐College Year / ☐Higher

Q10 Occupation (Choose **one**. If there are more than 2, please check the one you spend more time.)
☐ Housewife Farmer: Rice / ☐Farmer: Coconut /☐Fishery / ☐Shop keeper or owner /
☐ Tourist business / ☐Construction worker / ☐Civil servant / ☐Teacher / ☐Other (specify)_____

Q11 Does your household own these items?

11.1 Electricity ☐Yes / ☐No
11.2 Radio ☐Yes / ☐No
11.3 Television ☐Yes / ☐No
11.4 Refrigerator ☐Yes / ☐No
11.5 Bicycle ☐Yes / ☐No
11.6 Motorcycle ☐Yes / ☐No
11.7 Bike-Car ☐Yes / ☐No
11.8 Tin or cement wall ☐Yes / ☐No

Section2: Activities of Microscopists

Q12 What was the **most** important reason for you to become Microscopists? (Choose **one**)

☐**12.1.** Interested in Malaria treatment

☐**12.2.** Interested in Malaria prevention

☐**12.3.** Recommended by villagers / village heads (Barangay Captain)

☐**12.4.** Interested in additional income

☐**12.5.** Interested in reducing Malaria in your village

☐**12.6.** Interested in saving villagers' lives from Malaria

☐**12.7.** Other (specify) _____

Q13 How many patients did you see last week? _____**Person(s)**

Q14 How many of your patients were Malaria last week? _____**Person(s)** (If 0→**Q18)**

Q15 If Q4 is Yes, please tell me about the kinds and the amount.

15.1. *Plasmodium. malariae*	☐**A.** Yes (_____person/week)/	☐**B.** No
15.2. *Plasmodium. ovale*	☐**A.** Yes (_____person/week)/	☐**B.** No
15.3. *Plasmodium. vivax*	☐**A.** Yes (_____person/week)/	☐**B.** No
15.4. *Plasmodium. falciparum*	☐**A.** Yes (_____person/week)/	☐**B.** No
15.5. Unknown	☐**A.** Yes (_____person/week)/	☐**B.** No

Q16 How much time do you spend time on **preventive activities** on both seasons? (For example vector control.)

16.1. Dry season:_____**days per week** and _____**hours in each day**

16.2. Wet season:_____**days per week** and _____**hours in each day**

Q17 How much time do you spend time on **curative activities** on both seasons? (For example, Microscopic test.)

17.1. Dry season:_____**days per week** and _____**hours in each day**

17.2. Wet season:_____**days per week** and _____**hours in each day**

Q18 Do villagers visit you to seek for health advice when they are sick? (Choose **one**)

☐**A.** Regularly / ☐**B.** Sometimes / ☐**C.** Rarely / ☐**D.** Never

Q19 Do you visit villagers to find Malaria patients? (Choose **one**)

☐**A.** Regularly / ☐**B.** Sometimes / ☐**C.** Rarely / ☐**D.** Never (if Never → **Q21**)

Q20 If Yes, when do you visit villagers to find Malaria patients? (Choose **one**)

☐**A.** Mainly in rainy season / ☐**B.** Mainly in dry season / ☐**C.** Both seasons

Q21 When you see a sick villager, what do you do to diagnose if he/she has Malaria?

21.1. Observe his/her symptoms ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.2. Ask symptoms from his/her family ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.3. Take body temperature (by hand or thermometer) ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.4. Use Microscope ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.5. Rapid Diagnostic Test ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.6. Take him/her to health center or hospital for Malaria diagnosis ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

21.7. Other (specify _____

Q22 If you find out that he/she has Malaria, what do you do to treat him/her?

22.1. Give anti-Malarial drugs ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

22.2. Advise him/her to buy anti-Malarial drugs ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

22.3. Refer to health center or hospital ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

22.4. Other(specify)_____ ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q23 When you gave anti-Malarial drugs to Malaria patients, did you explain about the medicine? (Choose **one**)

☐**A.** Yes / ☐**B.** No (If No→ **Q25**)

Q24 If Yes, what did you explain about the anti-Malarial drugs?

24.1. Kinds/number of tablets the patient needs to take each day (on Day 1, 2 and 3)

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

24.2. As soon as the patient gets better, he/she can stop taking the anti-Malarial drugs

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

24.3. If the patient has left-over tablets, he/she can keep them or gave them to others

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

24.4. Even though the patient gets better, he/she has to take all the tablets you give

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

24.5. Other (specify)_____

Q25 What do you think will happen if the Malaria patient does not take all the tablets you gave?

251. They can save some tablets for the next Malaria infection

☐**A.** Appropriate / ☐**B.** Inappropriate / ☐**C.** Don't know

25.2. They can save some tablets for family members or friends to treat Malaria in the future

☐**A.** Appropriate / ☐**B.** Inappropriate / ☐**C.** Don't know

25.3. The patient's Malaria cannot be treated completely

☐**A.** True / ☐**B.** False / ☐**C.** Don't know

25.4. It will end up spreading drug resistance

☐**A.** Possible / ☐**B.** Impossible / ☐**C.** Don't know

25.5. Other (specify) _____

Q26 Have you referred any Malaria patients to health centers or hospitals? (Choose **one**)

☐**A.** Yes / ☐**B.** No (If No→**Q28)**

Q27 If Yes, why did you do so?

27.1. Because he/she was tested positive and had severe symptoms ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.2. Because he/she was tested negative for Malaria ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.3. Because he/she was tested negative and had severe symptoms ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.4. Because I did not have Malaria medicine ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.5. Because the patient did not recover from Malaria ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.6. Because the patient was pregnant. ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

27.7. Other (specify) _____

Q28 After you treated Malaria patients, did you make a home visit and check if he/she recovered? (Choose **one**)

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q29 After you treated Malaria patients, did you ask him/her or family if he/she recovered? (Choose **one**)

☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q30 Have you ever explained to villagers how to prevent Malaria? (Choose **one**)

☐**A.** Yes / ☐**B.** / No (If No→**Q32**)

Q31 If Yes, what did you explain about Malaria prevention?

31.1. Don't come close to malaria patients? ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.2. Don't share utensils or dishes with Malaria patients ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.3. Avoid mosquito bites ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.4. Use mosquito coils ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.5. Spray your house ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.6. Clear bush around your house ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.7. Fill out water pools ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.8. Cover water jars/tanks ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.9. Wear long-sleeve shirts/pants ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.10. Sleep under bed-nets at home ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

31.11. Bring mosquito nets when you go to the forest ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Section 3: Knowledge of Malaria Epidemiology and Prevention

Q32 What are the major symptoms of Malaria?

32.1. Stomach ache ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.2. Diarrhea ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.3. Nausea ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.4. Fever ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.5. Shivering ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.6. Coma ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.7. Sweating ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.8. Convulsion ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.9. Anemia ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.8. Headache ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
32.9. Other (specify) _____

Q33 How do you think Malaria is transmitted?

33.1. By cough or sneeze of Malaria patients ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.2. By touching blood of Malaria patients ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.3. By touching utensils that Malaria patients used ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.4. By sharing food with Malaria patients ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.5. By coming close to mosquitoes ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.6. By mosquito bites ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.7. Other (specify) _____

Q34 Do you happen to know which mosquitoes transmit Malaria?

34.1. Male Culex ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.2. Female Culex ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.3. Male Anopheles ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.4. Female Anopheles ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.5. Male Aedes ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.6. Female Aedes ☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know

Q35 When do you think mosquitoes are the most active? (Choose **one**)

☐**A.** Morning / ☐**B.** Afternoon / ☐**C.** Evening-Night / ☐**D.** Other (specify)_____

Q36 How did you learn about disease transmission?

36.1. Parents ☐**A.** Yes / ☐**B.** No

36.2. School education ☐**A.** Yes / ☐**B.** No

36.3. TV ☐**A.** Yes / ☐**B.** No

36.4. Book/Magazine ☐**A.** Yes / ☐**B.** No

36.5. Microscopist's training ☐**A.** Yes / ☐**B.** No

36.6. Other (specify)_____

Q37 Do you take any preventive measures do you usually take for yourself? (Choose **one**)

☐**A.** Yes (If Yes→Don't ask **Q31**) / ☐**B.** No (If No →**Q40**)

Q38 If Yes, what preventive measures do you usually take for yourself?

38.1. Come back home before dawn

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.2. Wear long-sleeve shirts/pants

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.3. Sleep under bed-nets at home

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.4. Refrain from going to the forest

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.5. Bring mosquito nets to the forest

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.6. Other (specify)_____

Q39 If Yes, how did you learn about disease prevention

39.1. Parents ☐**A.** Yes / ☐**B.** No

39.2. School education ☐**A.** Yes / ☐**B.** No

39.3. TV ☐**A.** Yes / ☐**B.** No

39.4. Book/Magazine ☐**A.** Yes / ☐**B.** No

39.5. Microscopist training ☐**A.** Yes / ☐**B.** No

39.6. Other (specify)_____

Q40 If No, why is that you did not take preventive measures against Malaria?

40.1. Because I am not afraid of Malaria ☐**A.** Yes / ☐**B.** No

40.2. Because I have Malaria Immunity ☐**A.** Yes / ☐**B.** No

40.3. Because there is little chance of death from Malaria ☐**A.** Yes / ☐**B.** No

40.4. Because I am not sure what kinds of preventive measures are effective ☐**A.** Yes / ☐**B.** No

40.5. Other(specify)_____

Section 4: Job-satisfaction

Ask yourself; How **satisfied** am I with this aspect of my Microscopist job?

Very Sat. means I am very satisfied with this aspect of my job

Sat. means I am satisfied with this aspect of my job

N. means I can't decide whether I am satisfied or not with this aspect of my job

Disat. means I am dissatisfied with this aspect of my job

Very Dissat. means I am very dissatisfied with this aspect of my job

---

On my present job as Microscopist job, this is how I feel about • • •

	1 Very Sat.	2 Sat.	3 N.	4 Disat.	5 V ery DIssat
Q41 Being able to keep busy all the time	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q42 The chance to work alone on the job	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q43 The chance to do different things from time to time	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q44 The chance to be "somebody" in the community	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q45 The way my boss handles his/her workers	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q46 The competence of my supervisor in making decisions	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q47 Being able to do things that don't go against my conscience	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q48 The way my job provides for steady employment	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q49 The chance to do things for other people	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q50 The chance to tell people what to do	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q51 The chance to do something that makes use of my abilities	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q52 The way malaria control program (CHO) policies are put into practice	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q53 My pay and the amount of work I do	☐1 /	☐2 /	☐3 /	☐4 /	☐5

	1 Very Sat.	2 Sat.	3 N.	4 Disat.	5 V ery DIssat
Q54 The chances for advancement on this job	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q55. The freedom to use my own judgment	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q56 The chance to try my own methods of doing the job	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q57 The working conditions	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q58 The way my co-workers get along with each other g	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q59 The praise I get for doing a good job	☐1 /	☐2 /	☐3 /	☐4 /	☐5
Q60 The feeling of accomplishment I get from the job	☐1 /	☐2 /	☐3 /	☐4 /	☐5

Section 5: Microscope Use

◆ **Preparation and documentation**

Q61 Preparation of microscope, needle, methanol and first-aid dressings, Gimza staining solution, slides and object slides — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q62 Check the expiry dates of all the solutions — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q63 Write the names of the patient on the slides — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q64 Write the date on each slide — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q65 Select the 4th finger of the left hand to take the peripheral blood sample — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q66 Clean the finger with alcohol swab and allow it to air dry — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q67 Record the results in the CHW register — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

◆ **Microscope usage**

Q68 Take patients peripheral blood — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q69 Prepare samples immediately after taking the blood — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q70 Use clean slide glass — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q71 Put one droplet of blood on the slide glass — ☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Q72	With cover glass spread the blood so as to obtain a thin layer of blood cells	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q73	The angle of the cover glass is 30 degrees	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q74	Dry immediately	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q75	Fix with methanol for 2 to 5 minutes	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q76	Too much drying damages the staining	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q77	Keep the slides fixed with methanol horizontally and add the staining solution	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q78	When lots of samples are used, use staining bottle	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q79	Staining time depends on the concentration of the dyes (usually between 10 and 30 minutes	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q80	Maximum staining time is 45 minutes and even if you wait longer, the color does not change	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q81	When you want to stain strongly you stain again with newly prepared staining solutions	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q82	Wash with buffer	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q83	If insoluble pigments are present at the surface of the solutions, take them off carefully	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q84	Adjust the intensity of the staining by the washing time with the buffer	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q85	After washing , take off the water quickly and dry with cold air	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q86	Observe with microscope	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q87	Nuclei of malaria protozoa inside red blood cells will be stained in red	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q88	The cytoplasm of malaria protozoa inside red blood cells will be stained in blue	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q89	When malaria protozoa is found inside red blood cells, check which kind of protozoa it is	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

◆ **Identification of the kind of malaria protozoa**

Q90 In the case of ***Plasmodium falciparum***, how do you identify?

1.	The size of infected red blood cells	☐**A.** Small / ☐**B.** Normal/ ☐**C.** Big
2.	The spike on the surface of infected red blood cells	☐**A.** Yes / ☐**B.** No
3.	The spots inside the infected red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
4.	Several protozoa inside a same red blood cell	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
5.	Protozoa stages on the red blood sample	☐**A.** Only the ring form / ☐**B.** All stages
6.	Big ring structures	☐**A.** Always / ☐**B.** Never
7.	Chromatin dots	☐**A.** Singular number / ☐**B.** Plural number
8.	Band structures	☐**A.** Always / ☐**B.** Never
9.	Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

Q91 In the case of ***Plasmodium vivax***, how do you identify?

1.	The size of infected red blood cells	☐**A.** Small / ☐**B.** Normal/ ☐**C.** Big
2.	The spike on the surface of infected red blood cells	☐**A.** Yes / ☐**B.** No
3.	The spots inside the infected red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
4.	Several protozoa inside a same red blood cell	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
5.	Protozoa stages on the red blood sample	☐**A.** Only the ring form / ☐**B.** All stages
6.	Big ring structures	☐**A.** Always / ☐**B.** Never
7.	Chromatin dots	☐**A.** Singular number / ☐**B.** Plural number
8.	Band structures	☐**A.** Always / ☐**B.** Never
9.	Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

Q92 In the case of **4-days fever malaria**, how do you identify?

1.	The size of infected red blood cells 1	☐**A.** Small / ☐**B.** Normal/ ☐**C.** Big
2.	The spike on the surface of infected red blood cells	☐**A.** Yes / ☐**B.** No
3.	The spots inside the infected red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
4.	Several protozoa inside a same red blood cell	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
5.	Protozoa stages on the red blood sample	☐**A.** Only the ring form / ☐**B.** All stages
6.	Big ring structures	☐**A.** Always / ☐**B.** Never
7.	Chromatin dots	☐**A.** Singular number / ☐**B.** Plural number
8.	Band structures	☐**A.** Always / ☐**B.** Never
9.	Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

Q93 In the case of **egg-shape fever malaria**, how do you identify?

1.	The size of infected red blood cells	☐**A.** Small / ☐**B.** Normal/ ☐**C.** Big
2.	The spike on the surface of infected red blood cells	☐**A.** Yes / ☐**B.** No
3.	The spots inside the infected red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
4.	Several protozoa inside a same red blood cell	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
5.	Protozoa stages on the red blood sample	☐**A.** Only the ring form / ☐**B.** All stages
6.	Big ring structures	☐**A.** Always / ☐**B.** Never
7.	Chromatin dots	☐**A.** Singular number / ☐**B.** Plural number
8.	Band structures	☐**A.** Always / ☐**B.** Never
9.	Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

◆ Safe handling and disposal

Q94	Put on a new pair of gloves when starting	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q95	Do not touch patient blood	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q96	Use a sterile lancet to puncture the patient finger	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q97	Discard the needle in sharps bins just after usage	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q98	Use a new needle for each patient	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
Q99	Discard glove wrappers, alcohol swab, desiccant and cassette in non-sharps container	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never

Thank you very much for your cooperation!

Appendix 13: Questionnaire for microscopist (Tagalog)

CODE _

Questionnaire on Malaria (Microscopists-level)

Date

■ Day / Month / Year

■ Starting (time) ■ Ending (time) ➨ Total

: : _____

Section 1: Socio-demographic characteristics

Q1 Tirahan **Barangay** _____

Q2 Kailan naging BMM? **Buwan** _____ **Taon** _____

Q3 Edad _____ (YEARS OLD)

Q4 Kasarian ☐Lalaki / ☐Babae

Q5 Karayuan (Pumili ng isa) ☐Di nag-asawa / ☐May-asawa / ☐Diborsyo / ☐Balo

Q6 Layo ng bahay sa Health Center _____ minuto kung maglalakad/ Iba pa (specify)_____

Q7 Relihiyon (Pumili ng isa) ☐Katoliko / ☐Protestante / ☐4 Square / ☐LRC / ☐Muslim
☐Pagano / ☐Iba pa (specify)_____

Q8 Etniko (Pumili ng isa)
☐Cebuano / ☐Bisaya (binisaya) / ☐Cuyunon (Cuyunan) / ☐Bicolana / ☐Mindanao
☐Kagayanan / ☐Tagalog / ☐Tagbanwa / ☐Palawan(Pinalawon, Palawanon) / ☐OIba pa (specify)_____

Q9 Pinag-aralan (Pumili ng isa)
☐ Di nakapag-aral / ☐Elementarya / ☐Mataas na Paaralan / ☐Kolehiyo / ☐Higher

Q10 Hanapbuhay (Pumili; kung higit sa 2 piliin ang mas mahabang oras na ginugugol)
☐ Housewife / ☐Farmer: Rice / ☐Farmer: Coconut /☐Fishery / ☐Shop keeper or owner /
☐ Tourist business / ☐Construction worker / ☐Civil servant / ☐Teacher / ☐Other (specify)_____

Q11 Does your household own these items?

11.1 Elektrisidad	☐**A.** Oo / ☐**B.** Hindi
11.2 Radyo	☐**A.** Oo / ☐**B.** Hindi
11.3 Telebisyon	☐**A.** Oo / ☐**B.** Hindi
11.4 Refrigerator	☐**A.** Oo / ☐**B.** Hindi
11.5 Bisikleta	☐**A.** Oo / ☐**B.** Hindi
11.6 Motorsiklo	☐**A.** Oo / ☐**B.** Hindi
11.7 Bisikleta may sidecar	☐**A.** Oo / ☐**B.** Hindi
11.8 Yero o Semento)	☐**A.** Oo / ☐**B.** Hindi

Section2: Activities of Microscopists

Q12 Ano ang pinakamahalagang dahilan para maging BMM 9Pumili ng isa) (Pumili ng isa)

☐**12.1.** Interesado sa panggagamot ng malaria

☐**12.2.** Interesado sa pag-iwas sa malaria

☐**12.3.** Rekomendasyon ng barangay o ng Kapitan

☐**12.4.** Interesado sa dagdag na kita

☐**12.5.** Interesadong mapababa ang malaria sa barangay

☐**12.6.** Interesadong mailigtas ang buhay ng mga kabarangay sa malaria

☐**12.7.** Iba pa (specify) _____

Q13 Ilan ang pasyente na nagpatingin noong nakaraang lingo? _____**Person(s)**

Q14 Ilan sa mga ito ay Malaria? _____**Person(s)** (**Kung wala→Q16**)

Q15 Kung OO Ano klase ng Malaria at ilan?

15.1. *Plasmodium. malariae* ☐**A.** Oo (_____person/week)/ ☐**B.** Hindi

15.2. *Plasmodium. ovale* ☐**A.** Oo (_____person/week)/ ☐**B.** Hindi

15.3. *Plasmodium. vivax* ☐**A.** Oo (_____person/week)/ ☐**B.** Hindi

15.4. *Plasmodium. falciparum* ☐**A.** Oo (_____person/week)/ ☐**B.** Hindi

15.5. Unknown ☐**A.** Oo (_____person/week)/ ☐**B.** Hindi

Q16 Gaanong oras ang ginugugol ninyo sa nga gawain para sa pag-iwas ng malaria: Tag-ulan? Tag-araw?

16.1. Tag-init:_____**araw sa 1 lingo** at_____**oras sa 1 araw**

16.2. Tag-ulan_____**araw sa1 linggo** at_____**oras sa 1 araw**

Q17 Gaanong oras ang ginugugol sa mga gawain para sa pagpapagaling ng malaria: Tag-ulan? Tag-init?

17.1. Tag-init:_____**araw sa 1 lingo** at_____**oras sa 1 araw**

17.2. Tag-ulan_____**araw sa1 linggo** at_____**oras sa 1 araw**

Q18 Ang mga kabarangay ninyo ba ay humuhingi ng payong pangkalusugan kung sila ay may sakit? (Pumili ng isa) ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Madalang / ☐**D.** Hindi

Q19 Bumibisita ka ba sa mga kabarangay upang magtingin ng may sakit ng malaria? (Pumili ng isa)

☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Madalang / ☐**D.** Hindi (**Kung Hindi → Q21**)

Q20 Kung Oo, Kailan ka bumibisita sa mga taga barangay para alamin ang may malaria? (Pumili ng isa)

☐**A.** Tuwimg Tag-ulan / ☐**B.** Tuwing tag-init / ☐**C.** Parehong panahon

Q21 Kung may matagpuan kang may sakit, ano ang ginagawa upang malalaman kung siya ay may malaria?

21.1. Obserbahan ang simtomas ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.2. Tinatanong ang simtomas sa kasambahay ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.3. Kinukuha ang temperature (gamit ang kamay o thermometer) ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.4. Sinisilip sa microscope ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.5. Gamit ang RDTs ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.6. Dinadala sa Health Center o sa Ospital upang malaman kung may malaria ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

21.7. Iba pa (specify) _____

Q22 Kung malaman na may malaria, ano ang ginagawa para gamutin?

22.1. Binibigyan ng gamot sa malaria ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

22.2. Pinabibili ng gamut sa malaria ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

22.3. Pinapupunta sa health center o hospital ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

22.4. Iba pa (specify)_____ ☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

Q23 Kapag ibinibigay ang gamot sa malaria, ipinaliliwanag ba kung ano ang mga gamot? (Pumili ng isa)

☐**A.** Oo / ☐**B.** Hindi (**Kung Hindi → Q25**)

Q24 Kung Oo, Ano ang ipinaliliwanag tungkol sa gamot?

24.1. Ano/ dami ng tableta na kailangang inumin ng pasyente araw-araw

☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

24.2. Kapag gumaling na ang pasyente pwede na niyang itigilang pag-inom ng gamot

☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

24.3. Kung may matirang gamut pwede niyang itago o ipamigay sa iba

☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

24.4. Kung ang pasyenta ay magaling na, kailangan ubusin niya ang lahat ng gamot

☐**A.** Palagi / ☐**B.** Minsan / ☐C. Hindi

24.5. Iba pa (specify)_____

Q25 Ano sa palagay ninyo ang mangyayari kung hindi uubusin ang lahat na ibinigay na gamot?

25.1. Pwede nilang itabi ang natirang gamot para sa susunod na pagkakasakit

☐**A.** Narapat / ☐**B.** Di nararapat / ☐C. Hindi alam

25.2. Pwedeng itabi para sa kapamilya o kaibigan na magkakasakit ng malaria sa darating na panahon

☐**A.** Narapat / ☐**B.** Di nararapat / ☐C. Hindi alam

25.3. Ang pasyente na may malaria ay di na magagamot

☐**A.** Tama / ☐**B.** Mali / ☐C. Hindi alam

25.4. Magiging sanhi ng paglaganap ng “drug resistance**”**

☐**A.** Posible / ☐**B.** Di possible / ☐C. Hindi alam

25.5. Iba pa (specify) _____

Q26 Nagpadala ka na ba ng pasyante sa health center o sa ospital? (Pumili ng isa)

☐**A.** Oo / ☐**B.** Hindi (**Kung Hindi →Q28)**

Q27 Kung Oo bakit mo pinadala?

27.1. May malaria at malala na	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.2. Walang malaria	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.3. Walang malaria ngunit malala ang sintomas	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.4. Wala akong gamot sa malaria	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.5. Hindi gumaling ang pasyente sa malaria	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.6. Ang pasyente ay buntis	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
27.7. Iba pa (specify) _____	

Q28 Pagkatapos mong mabigyan ng gamot ang pasyente, binibisita mo ba para alamin kung siya ay gumaling? (Pumili ng isa) ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q29 Pagkatapos mong mabigyan ng gamot ang pasyente , tinatanong mo ba ang kapamilya o ang pasyente kung gumaling? (Pumili ng isa) ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q30 Ipinaliwanag mo ba sa mga taga barangay kung paano maiiwasan ang malaria? (Pumili ng isa)

☐**A.** Oo / ☐**B.** Hindi (**Kung Hindi →Q32**)

Q31 Kung Oo, ano ang ipinaliwanag ninyo tungkol sa pagiwas sa malaria?

31.1. Huwag lalapit sa may sakit na malaria	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.2. Huwag gagamit ng kagamitan ng may sakit ng malaria	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.3. Iwasan ang kagat ng lamok	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.4. Gumamit ng “mosquito coils”	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.5. Magisprey ng bahay	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.6. Linisin ang dawag sa paligid	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.7. Alisin ang mga maiipon na tubig	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.8. Takpan ang imbakan ng tubig	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.9. Magsuot ng mahabang manggas	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.10. Matulog sa loob ng kulambo	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
31.11. Magdala ng kulambo kung pupunta sa gubat	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Section 3: Knowledge of Malaria Epidemiology and Prevention

Q32 What are the major symptoms of Malaria?

32.1. Sakit ng tiyan	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.2. Nagtatae	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.3. Nagsusuka	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.4. Nilalagnat	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.5. Giniginaw	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.6. Walang malay	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.7. Pinagpapawisan	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.8. Hinihimatay	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.9. Namumutla	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.10. Masakit ang ulo	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
32.11. Iba pa (specify) _____	

Q33 Paano nasasalin ang malaria?

33.1. Pag-ubo at bahin ng may sakit na malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.2. Sa paghawak sa dugo ng may malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.3. Paghawak sa kagamitan na gamit ng may sakit na malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.4. Makihati sa pagkain ng may sakit na malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.5. Paglapit sa lamok	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.6. Kagat ng lamok	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
33.7. Iba pa (specify) _____	

Q34 Alam ba ninyo kung anong lamok ang nagdadala ng malaria?

34.1. Lalaking *Culex*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
34.2. Babaeng *Culex*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
34.3. Lalaking *Anopheles*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
34.4. Babaeng *Anopheles*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
34.5. Lalaking *Aedes*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam
34.6. Babaeng *Aedes*	☐**A.** Oo / ☐**B.** Hindi / ☐**C.** Di alam

Q35 Kailan ang mga lamok ay aktibo? (Pumili ng isa) ☐**A.** Umaga / ☐**B.** Hapon / ☐**C.** Gabi / ☐**D.** Iba pa_____

Q36 Paano mo nalaman ang tungkol sa pagsalin ng sakit na malaria?

36.1. Magulang	☐**A.** Oo / ☐**B.** Hindi
36.2. Napag-aralan sa eskuwelahan	☐**A.** Oo / ☐**B.** Hindi
36.3. Telebisyon	☐**A.** Oo / ☐**B.** Hindi
36.4. Libro/Magazine	☐**A.** Oo / ☐**B.** Hindi
36.5. Pagsasanay bilang Microscopist	☐**A.** Oo / ☐**B.** Hindi
36.6. Iba pa (specify)_____	

Q37 May ginagawa ka bang paraan ng pag-iwas pR sa iyong sarili?

☐**A.** Oo (**Kung Oo→**huwag itanong **Q40**) / ☐**B.** Hindi (**Kung Hindi → Q40**)

Q38 Kung Oo, Ano ang mga paraan na ginagawa?

38.1. Bumabalik sa bahay bago magdapit hapon

☐**A.** Palagi / ☐**B.** Di palagi / ☐**C.** Minsan / ☐**D.** Bihira / ☐**E.** Hindi

38.2. Magsuot ng mahabang manggas

☐**A.** Palagi / ☐**B.** Di palagi / ☐**C.** Minsan / ☐**D.** Bihira / ☐**E.** Hindi

38.3. Matulog sa loob ng kulambo

☐**A.** Palagi / ☐**B.** Di palagi / ☐**C.** Minsan / ☐**D.** Bihira / ☐**E.** Hindi

38.4. Iwasan ang pagpunta sa gubat

☐**A.** Palagi / ☐**B.** Di palagi / ☐**C.** Minsan / ☐**D.** Bihira / ☐**E.** Hindi

38.5. Magdala ng kulambo kung pupunta sa gubat

☐**A.** Palagi / ☐**B.** Di palagi / ☐**C.** Minsan / ☐**D.** Bihira / ☐**E.** Hindi

38.6. Iba pa (specify)_____

Q39 Kung Oo, paano mo nalaman ang paraan ng pag-iwas?

39.1. Magulang ☐**A.** Oo / ☐**B.** Hindi

39.2. Sa pag-aaral ☐**A.** Oo / ☐**B.** Hindi

39.3. Ttelebisyon ☐**A.** Oo / ☐**B.** Hindi

39.4. Libro/magazine ☐**A.** Oo / ☐**B.** Hindi

39.5. Pagsasanay bilang microscopist ☐**A.** Oo / ☐**B.** Hindi

39.6. Iba pa (specify)_____

Q40 If No, why is that you did not take preventive measures against Malaria? Kung hindi, bakit hindi ka gumagamit ng paraan upang makaiwas sa Malaria?

40.1. Because I am not afraid of Malaria ☐**A.** Oo / ☐**B.** Hindi

Hindi ako natatakot sa malaria

40.2. Because I have Malaria Immunity ☐**A.** Oo / ☐**B.** Hindi

Meron akong pananggalang laban sa malaria

40.3. Because there is little chance of death from Malaria ☐**A.** Oo / ☐**B.** Hindi

Kakaunti lamang ang namamatay sa malaria

40.4. Because I am not sure what kinds of preventive measures are effective ☐**A.** Oo / ☐**B.** Hindi

Hindi ako sigurado kung alin sa pamamaraan ng pag-iwas ang epektibo

40.5. Iba pa (specify)_____

Section 4: Job-satisfaction

Ask yourself; How **satisfied** am I with this aspect of my Microscopist job?

Very Sat. means I am very satisfied with this aspect of my job

Sat. means I am satisfied with this aspect of my job

N. means I can't decide whether I am satisfied or not with this aspect of my job

Disat. means I am dissatisfied with this aspect of my job

Very Dissat. means I am very dissatisfied with this aspect of my job

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Bilang microscopist , ito ang aking mga nararamdaman…

	5 Very Sat.	4 Sat.	3 N.	2 Disat.	1 Very DIssat
Q41 Laging may pinagkakaabalahan	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q42 Nagkaroon ng pagkakataaon na magtrabahong mag-isa	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q43 Nagkaroon ng pagkakataon na magtrabaho ng ibang bagay	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q44 Nagkaroon ng makilala o maiba sa komunidad	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q45 Paraan ng pinuno sa pakikitungo sa mga kawani	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q46 Ang pagiging kompiyansa ng pinuno na gumawa ng desisyon	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q47 Magkaroon ng pagkakataon na gawin ang mga bagay na di labag sa kalooban	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q48 Ang trabaho ay nagging permanente	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q49 Makagawa ng ibang bagay sa kapwa	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q50 Nagkaroon ng pagkakataon na makapagbigay payo sa ibang tao kung ano ang dapat gawin	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q51 Ang pagkakataon na gumawa ng ibang bagay na gamitin and sariling abilidad	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q52 Nagkaroon ng pagkakataon na ang mga patakaran sa programa sa pagsugpo ng malaria ay maipatupad	☐5 /	☐4 /	☐3 /	☐2 /	☐1
Q53 Ang aking tinatanggap na kabayaran/dami ng gawain na ginagampanan	☐5 /	☐4 /	☐3 /	☐2 /	☐1

	5	4	3	2	1
	Very Sat.	Sat.	N.	Disat.	Very DIssat

Q54 Pagkakataon na mapalawak ang kaalaman sa sa gawaing ito

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q55 . Ang kalayaan na gamitib ang sariling paghusga

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q56 Pagkakataon na gamitin ang sariling pamamaraan sa pagtupad ng tungkulin

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q57 Ang kondisyon ng pinagtatrabahuhan

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q58 Ang magandang samahan ng mga katrabaho

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q59 Mga papuri na nakukuha sa maayos na trabaho

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Q60 Ang pakiramdam ng katuparan na nakukuha sa trabaho

☐5 / ☐4 / ☐3 / ☐2 / ☐1

Section 5: Paggamit ng microscope

◆ **Preparation and documentation**

Q61 Paghahanda ng microscope, pantusok,methanol, first-aid dressing, giemsa, slides at iba pang kagamitan — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q62 Pag-alam kung paso na gamit sa pag “stain” — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q63 Paglagay ng pangalan ng pasyente sa slide — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q64 Paglagay ng petsa sa slide — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q65 Pagpili ng ikaapat na daliri ng kaliwang kamay para tusukin at gumawa ng smear — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q66 Paglinis ng daliri ng bulak na mag alcohol at patuyuin — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q67 Pagrekord ng resulta sa CHW register — ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

◆ **Microscope usage**

Q68 Pagkuha ng dugo ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q69 Gawin agad ang sample pagkatapos kunin ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q70 Paggamit ng malinis at bagong slides ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q71 Paglagay ng isang patak na dugo sa slides ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q72 Pagkalat ng dugo sa slide upang makagawa ng magandang thin smear ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q73 Ang angulo ng pangkalat ng dugo ay 30° ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q74 Patuyuin agad ang dugo ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q75 Lagyan ng methanol ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q76 Ang sobrang pagpapatuyo ay makasisira ng stain ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q77 Kung ang slide ay nilalagyan ng methanol dapat ito ay nakatagilid ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q78 Kung marami ang sample maaring gumamit ng staining rack o jar ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q79 Ang tagal ng paglalagay ng stain ay depende sa konsentrasyon ng stain (karaniwan 10-30 minuto) ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q80 Ang pinakamatagal na pag stain ay 45 minuto, kahit tagalan pa ito ay din a magbabago ang kulay ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q81 Kung gusting maging matingkad ang kulay pwede pang ulutin ang pagstain kahit ito ay na stain na ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q82 Hugasan ng buffer ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q83 Kung may mga maliliit na dumi sa ibabaw ng stain, alinsin ito ng dahan-dahan ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q84 Maiiba ang tindi ng kulay sa pamamagitan ng tagal sa paghugas ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q85 Pagkatapos hugasan, alisin agad sa tubigat patuyuin ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q86 Silipin sa microscope ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q87 Ang nuclei ng malaria ay nagiging kulay pula pagkatapos malagyan ng stain ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q88 Ang pinaka katawan ng malaria ay nagiging kulay asul ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Q89 Kung makitang malaria, alaming kung anong klasw ☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

◆ **Identification of the kind of malaria**

Q90 Kung may makitang ***P. malariae****,* paano makikilala

91.1	Ang laki ng red blood cells	☐**A.** Small /☐**B.** Normal/ ☐**C.** Big
91.2	May mga spikes sa paligid ng red blood cells	☐**A.** Yes / ☐**B.** No
91.3	May mga tuldok sa loob ng red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
91.4	Marami sa loob ng red blood cells	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
91.5	Iba ibang stage sa loob ng red blood cells	☐**A.** Only the ring form / ☐**B.** All stages
91.6	May malaking hugis singsing	☐**A.** Always / ☐**B.** Never
91.7	May chromatin dot	☐**A.** Singular number / ☐**B.** Plural number
91.8	May hugis pahalang sa red blood cells (band form)	☐**A.** Always / ☐**B.** Never
91.9	May hugis sausage o saging	☐**A.** Always / ☐**B.** Never

Q91 Kung may makitang ***P. ovale****,* paano makikilala

91.1	Ang laki ng red blood cells	☐**A.** Small /☐**B.** Normal/ ☐**C.** Big
91.2	May mga spikes sa paligid ng red blood cells	☐**A.** Yes / ☐**B.** No
91.3	May mga tuldok sa loob ng red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
91.4	Marami sa loob ng red blood cells	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
91.5	Iba ibang stage sa loob ng red blood cells	☐**A.** Only the ring form / ☐**B.** All stages
91.6	May malaking hugis singsing	☐**A.** Always / ☐**B.** Never
91.7	May chromatin dot	☐**A.** Singular number / ☐**B.** Plural number
91.8	May hugis pahalang sa red blood cells (band form)	☐**A.** Always / ☐**B.** Never
91.9	May hugis sausage o saging Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

Q92 Kung may makitang ***P. vivax,*** paano makikilala

91.1	Ang laki ng red blood cells	☐**A.** Small /☐**B.** Normal/ ☐**C.** Big
91.2	May mga spikes sa paligid ng red blood cells	☐**A.** Yes / ☐**B.** No
91.3	May mga tuldok sa loob ng red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C.** Ziemann dots
91.4	Marami sa loob ng red blood cells	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
91.5	Iba ibang stage sa loob ng red blood cells	☐**A.** Only the ring form / ☐**B.** All stages
91.6	May malaking hugis singsing	☐**A.** Always / ☐**B.** Never
91.7	May chromatin dot	☐**A.** Singular number / ☐**B.** Plural number
91.8	May hugis pahalang sa red blood cells (band form)	☐**A.** Always / ☐**B.** Never
91.9	May hugis sausage o saging Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

Q93 Kung may makitang ***P. falciparum,*** paano makikilala

91.1	Ang laki ng red blood cells	☐**A.** Small /☐**B.** Normal/ ☐**C.** Big
91.2	May mga spikes sa paligid ng red blood cells	☐**A.** Yes / ☐**B.** No
91.3	May mga tuldok sa loob ng red blood cells	☐**A.** Maurer dots/ ☐**B.** Schuffner dots/ ☐**C** Ziemann dots
91.4	Marami sa loob ng red blood cells	☐**A.** Always / ☐**B.** Sometimes / ☐**C.** Never
91.5	Iba ibang stage sa loob ng red blood cells	☐**A.** Only the ring form / ☐**B.** All stages
91.6	May malaking hugis singsing	☐**A.** Always / ☐**B.** Never
91.7	May chromatin dot	☐**A.** Singular number / ☐**B.** Plural number
91.8	May hugis pahalang sa red blood cells (band form)	☐**A.** Always / ☐**B.** Never
91.9	May hugis sausage o saging Proliferative bodies in sausage shapes	☐**A.** Always / ☐**B.** Never

◆ **Safe handling and disposal (Paraan ng paghawak at pagtapon ng mga ginamit)**

Q94	Magsuot ng bagong glove kung magsisimula	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
Q95	Huwag hawakan ang dugo ng pasyente	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
Q96	Gumamit ng bagong lancet sa pagtusok sa pasyente	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
Q97	Magkaroon ng tapunan ng lancet pagkatapos gamitin	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
Q98	Gumamit ng bagong pantusok sa bawat pasyente	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi
Q99	Ang pagtapon ng gloves, bulak at iba pang kagamitan ay ihiwalay sa mga lancet.	☐**A.** Palagi / ☐**B.** Minsan / ☐**C.** Hindi

Thank you very much for your cooperation!

Appendix 14: Questionnaire for ex-malaria-patients (English)

CODE _

Questionnaire on Malaria (Community-level)

Date

TIME (Section 1 to 3)

■ **Starting (time)** ■ **Ending (time)** ➨ **Total**

: : _____

Section 1: Socio-demographic characteristics

AREA

- **Municipality** _____ **Barangay** _____

PARTICIPANT

- **Name of mother** (First) _____ (Last) _____
- **Age** _____ (years old)

- **Occupation** (Choose **one**. If there are more than 2, please check the one you spend more time.)
  ☐Farmer: Rice / ☐Farmer: Coconut /☐Fishery / ☐Shop keeper or owner / ☐Tourist business / ☐Construction worker / ☐Civil servant / ☐Housewife / ☐Other (specify)_____

- **Marital status** (Choose **one**) ☐Never married / ☐Married / ☐Divorced / ☐Widowed

- **Religion** (Choose **one**) ☐Roman Catholic / ☐Muslim / ☐Traditional animism / ☐Other (specify) __

- **Ethnicity** (Choose **one**)
  ☐Cuyunon (Cuyunan) / ☐Tagalog / ☐Hiligaynon (Ilonggo) / ☐Palawan(Pinalawon, Palawanon) / ☐Cebuano / ☐Ilocano / ☐Bisaya (binisaya) / ☐Kagayanan / ☐Tagbanwa /☐Other (specify) _____

- **Education status** (Choose **one**)
  ☐No grade completed / ☐Elementary Grade / ☐High school Year / ☐College Year / ☐Higher

HOUSEHOLD

- **Number of human in your household** _____ person

- **Number of children** _____ person

- What kinds of medical facility are there near your house? If Yes, how much minutes does it takes from your house?
  - Traditional healer ☐A. Yes (_____minutes) / ☐B. No
  - Regional hospital ☐A. Yes (_____minutes) / ☐B. No
  - Governmental health center ☐A. Yes (_____minutes) / ☐B. No
  - Microscopist ☐A. Yes (_____minutes) / ☐B. No
  - Private clinic / practitioner ☐A. Yes (_____minutes) / ☐B. No
  - Private pharmacy ☐A. Yes (_____minutes) / ☐B. No
  - Drug seller ☐A. Yes (_____minutes) / ☐B. No
  - NGO clinic or hospital ☐A. Yes (_____minutes) / ☐B. No

- **Does your household own these items?**
  - Electricity ☐A. Yes / ☐B. No
  - Radio ☐A. Yes / ☐B. No
  - Television ☐A. Yes / ☐B. No
  - Refrigerator ☐A. Yes / ☐B. No
  - Bicycle ☐A. Yes / ☐B. No
  - Motorcycle ☐A. Yes / ☐B. No
  - Bike-Car ☐A. Yes / ☐B. No
  - Tin or cement wall ☐A. Yes / ☐B. No

Section 2: Health seeking behavior

Q1 Who in your household most recently suffered from fever? (Choose **one**)

☐**A.** Yourself

☐**B.** Your spouse (_____years old)

☐**C.** Your son (_____years old)

☐**D.** Your daughter (_____years old)

☐**E.** Other (specify)_____(_____years old)

Q2 When was this most recent fever episode? _____**days ago**

Q3 Did you / your family has symptoms other than fever during most recent fever episode?

Symptoms	**That episode**
3.1. Stomach ache	☐A. Yes / ☐B. No
3.2. Diarrhea	☐A. Yes / ☐B. No
3.3. Nausea	☐A. Yes / ☐B. No
3.4. Fever	☐A. Yes / ☐B. No
3.5. Shivering	☐A. Yes / ☐B. No
3.6. Coma	☐A. Yes / ☐B. No
3.7. Sweating	☐A. Yes / ☐B. No
3.8. Convulsion	☐A. Yes / ☐B. No
3.9. Anemia	☐A. Yes / ☐B. No
3.10. Other (specify)_____	☐A. Yes / ☐B. No
3.11. Don't know	☐A. Yes / ☐B. No

Q4 During your / your family's most recent fever episode, did your family seek treatment outside home? (Choose **one**)

☐**A.** Yes (If Yes→**Q5**) / ☐**B.** No (If No→ **Q31**) / ☐**C.** Don't know (If Don't know→**Section3**)

Q5 Where, outside home, did you / your family **first** seek advice / treatment? (Choose **one**)

☐**A.** Traditional healer / ☐**B.** Regional hospital / ☐**C.** Governmental health center

☐**D.** Microscopist / ☐**E.** Private clinic / practitioner / ☐**F.** Private pharmacy

☐**G.** Drug seller / ☐**H.** NGO clinic or hospital / ☐**I.** Friend / Neighbor

☐**J.** Other (specify)_____

Q6 What was the reason for the first provider preference? Please choose **all** that apply.

☐**A.** Quality of treatment provided / ☐**B.** Experience of health provider

☐**C.** Provider is polite / ☐**D.** Good equipment

☐**E.** Treatment being cheap or free / ☐**F.** Provider is nearby

☐**G.** Other (specify)_____

Q7 Who made a decision to visit **the first provider you answered**? (Choose **one**)

☐**A.** Patient himself / herself / ☐**B.** Patient's father

☐**C.** Patient's mother / ☐**D.** Patient's son / ☐**E.** Patient's daughter

☐**F.** Other (specify)_____

Q8 How long after the fever started did you / your family first receives treatment? (Choose **one**)

☐**A.** Same day

☐**B.** Next day

☐**C.** 2 days after the illness started

☐**D.** 3 or more days after the illness started

☐**E.** Don't know or Don't remember

Q9 What kind of treatment did you / your family received? Please tick **all** that apply.

☐**A.** Anti-malarial drug

☐**B.** IM injection

☐**C.** IV infusion

☐**D.** Plants

☐**E.** Traditional Medicine

☐**F.** Other (specify)_____

☐**G.** Don't know

Q10 What kind of Plants did you use? Please tick **all** that apply.

☐**A.** Anona reticulata (custard apple)

☐**B.** Areca catechu (areca of betelnut palm)

☐**C.** Quisqualis indica (niyog-niyogan or Chinese honeysuckle)

☐**D.** Leucaena leucocephala (ipil-ipil)

☐**E.** Carica papaya (papaya)

☐**F.** Cassia alata (alapulko or ringworm bush)

☐**G.** Ananas comosus (pinya or pineapple)

☐**H.** Other (specify)_____

☐**I.** Don't know

☐**J.** Didn't use any Plants.

Q11 What kind of Traditional medicine did you use? Please tick **all** that apply.

☐**A.** Melaleuca leucadendron (cajeput oil tree)

☐**B.** Tinospora crispa (makabuhay)

☐**C.** Phyllanthus nirui (sampasampalukan or egg woman)

☐**D.** Cissampelos pareira (sinsaw-sinsawan)

☐**E.** Gliricidia sepium (kakawati)

☐**F.** Cassia alata (akapulko or ringworm bush)

☐**G.** Cassia alata (akapulko or ringworm bush)

☐**H.** Cassia alata (akapulko or ringworm bush)

☐**I.** Plumeria acutifolia (kalatsutsi or frangipani)

☐**J.** Anona squamosa (atis or custard apple).

☐**K.** Other (specify)_____

☐**L.** Don't know

☐**M.** Didn't use any traditional medicine

Q12 Did the person who had fever most recently have a blood test for malaria? (Choose **one**)

☐**A.** Yes, dipstick.→ **Q13**

☐**B.** Yes, by microscope.→**Q13**

☐**C.** Yes, but don't know / don't remember which one.→**Q13**

☐**D.** No.→**Q15**

☐**E.** Don't know or Don't remember.→**Q15**

Q13 Where did you / your family gets the blood test? (Choose **one**)

☐**A.** Traditional healer / ☐**B.** Regional hospital / ☐**C.** Governmental health center

☐**D.** Microscopist / ☐**E.** Private clinic / practitioner / ☐**F.** Private pharmacy

☐**G.** Drug seller / ☐**H.** NGO clinic or hospital / ☐**I.** Friend / Neighbor

☐**J.** Other (specify)_____

Q14 What was the result of blood test? (Choose **one**)

☐**A.** Negative **/** ☐**B.** Positive **/** ☐**C.** Impossible to diagnose **/** ☐**D.** Don't know

Q15 Were you / your family diagnosed as Malaria? (Choose **one**)

☐**A.** Yes **/** ☐**B.** No **/** ☐**C.** Impossible to diagnose **/** ☐**D.** Don't know or Don't remember

Q16 Did you / your family takes any anti-Malarial drugs? (Choose **one**)

☐**A.** Yes→ **Q17** / ☐**B.** No→ **Q22** / ☐**C.** Don't know or Don't remember→**Q22**

Q17 Who advised you / your family to take anti-malarial drugs ? (Choose **one**)

☐**A.** Traditional healer / ☐**B.** Regional hospital / ☐**C.** Governmental health center

☐**D.** Microscopist / ☐**E.** Private clinic / practitioner / ☐**F.** Private pharmacy

☐**G.** Drug seller / ☐**H.** NGO clinic or hospital / ☐**I.** Friend / Neighbor

☐**J.** Yourself / ☐**K.** Other (specify)_____

☐**L.** Don't know or Don't remember

Q18 Do you remember which anti-malarial drugs you / your family took? Please tick **all** that apply.

☐**A.** Artemisinin / ☐**B.** Artemether / ☐**C.** Aetesunate

☐**D.** Chloroquine / ☐**E.** A+M / ☐**F.** Fansidar

☐**G.** Mefloquine / ☐**H.** Malarine / ☐**I.** Paracetamol

☐**J.** Primaquine / ☐**K.** Tetracycline

☐**L.** Vitamins / ☐**M.** Other (specify)_____

☐**N.** Don't know / Don't remember

Q19 Do you remember how many days you continued taking the anti-malarial drugs?

1st anti-malarial drugs ☐**A.** Yes(_____days) / ☐**B.** Don't remember

2nd anti-malarial drugs(if there is) ☐**A.** Yes(I used_____for_____days) / ☐**B.** Don't remember

Q20 Did health provider of first health facility tell you / your family tell about

20.1. Treatment schedule of anti-Malarial drugs	☐A. Yes / ☐B. No
20.2. Possible adverse events of anti-Malarial drugs	☐A. Yes / ☐B. No
20.3. Importance of completing full regimen of anti-Malarial drugs	☐A. Yes / ☐B. No
20.4. What to do if you / your family did not get better	☐A. Yes / ☐B. No

Q21 Did you / your family gets better after consulting first treatment provider? (Choose **one**)

☐**A.** Yes→ **Section 3** / ☐**B.** No→ **Q22** / ☐**C.** Don't know→ **Section 3**

Q22 Did you seek further treatment outside home? (Choose **one**)

☐**A.** Yes→ **Q23** / ☐**B.** No→ **Section 3** / ☐**C.** Don't know or Don't remember→ **Section 3**

Q23 Which health provider, outside home, did you / your family visit as **second** treatment source? (Choose **one**)

☐**A.** Traditional healer / ☐**B.** Regional hospital

☐**C.** Governmental health center / ☐**D.** Microscopist

☐**E.** Private clinic / practitioner / ☐**F.** Private pharmacy

☐**G.** Drug seller / ☐**H.** NGO clinic or hospital

☐**I.** Friend / Neighbor / ☐**J.** Other (specify)_____

Q24 What was the reason for t**he second provider preference**? Please choose **all** that apply.

☐**A.** Quality of treatment provided / ☐**B.** Experience of health provider

☐**C.** Provider is polite / ☐**D.** Good equipment

☐**E.** Treatment being cheap or free / ☐**F.** Provider is nearby

☐**G.** Other (specify)_____

Q25 Who made a decision to visit **the second provider you answered**? (Choose **one**)

☐**A.** Patient himself / herself / ☐**B.** Patient's father

☐**C.** Patient's mother / ☐**D.** Patient's son / ☐**E.** Patient's daughter

☐**F.** Other (specify)_____

Q26 How long after the fever started did you / your family first receives treatment? (Choose **one**)

☐**A.** Same day

☐**B.** Next day

☐**C.** 2 days after the illness started

☐**D.** 3 or more days after the illness started

☐**E.** Don't know or Don't remember

Q27 What kind of treatment did you / your family received? Please tick **all** that apply.

☐**A.** Anti-malarial drug

☐**B.** IM injection

☐**C.** IV infusion

☐**D.** Plants

☐**E.** Traditional Medicine

☐**F.** Other (specify)_____

☐**G.** Don't know

Q28 What kind of Plants did you use? Please tick **all** that apply.

☐**A.** Anona reticulata (custard apple)

☐**B.** Areca catechu (areca of betelnut palm)

☐**C.** Quisqualis indica (niyog-niyogan or Chinese honeysuckle)

☐**D.** Leucaena leucocephala (ipil-ipil)

☐**E.** Carica papaya (papaya)

☐**F.** Cassia alata (alapulko or ringworm bush)

☐**G.** Ananas comosus (pinya or pineapple)

☐**H.** Other (specify)_____

☐**I.** Don't know

☐**J.** Didn't use any Plants.

Q29 What kind of Traditional medicine did you use? Please tick **all** that apply.

☐**A.** Melaleuca leucadendron (cajeput oil tree)

☐**B.** Tinospora crispa (makabuhay)

☐**C.** Phyllanthus nirui (sampasampalukan or egg woman)

☐**D.** Cissampelos pareira (sinsaw-sinsawan)

☐**E.** Gliricidia sepium (kakawati)

☐**F.** Cassia alata (akapulko or ringworm bush)

☐**G.** Cassia alata (akapulko or ringworm bush)

☐**H.** Cassia alata (akapulko or ringworm bush)

☐**I.** Plumeria acutifolia (kalatsutsi or frangipani)

☐**J.** Anona squamosa (atis or custard apple).

☐**K.** Other (specify)_____

☐**L.** Don't know

☐**M.** Didn't use any traditional medicine

→Respondents who sought treatment outside home 3 or more times →Q30

→ Respondents who sought treatment outside home 1 to 2 times →Section 3

Q30 Which health facility, if any, did you visit as **third** treatment source? (Choose **one**)

☐**A.** Traditional healer / ☐**B.** Regional hospital

☐**C.** Governmental health center / ☐**D.** Microscopist

☐**E.** Private clinic / practitioner / ☐**F.** Private pharmacy

☐**G.** Drug seller / ☐**H.** NGO clinic or hospital

☐**I.** Friend / Neighbor / ☐**J.** Other (specify)_____

→ Please go to Section 3

Q31 Why you didn't seek treatment outside home? (Choose **one**)

☐**A.** Did not have enough money / too expensive

☐**B.** Too far

☐**C.** Got better soon

☐**D.** Other (specify)_____

→ **Please go to Section 3**

Section 3: Knowledge of Malaria Epidemiology and Prevention

Q32 Have you ever heard about Malaria?

☐**A.** Yes→**Q33** / ☐**B.** No→**Section 4** / ☐**C.** Don't know→**Section 4**

Q33 What are the major symptoms of Malaria?

33.1. Stomach ache	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.2. Diarrhea	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.3. Nausea	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.4. Fever	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.5. Shivering	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.6. Coma	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.7. Sweating	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.8. Convulsion	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.9. Anemia	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.10. Other (specify)_____	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
33.11. Don't know	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know

Q34 How do you think Malaria is transmitted?

34.1. By cough or sneeze of Malaria patients	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.2. By touching blood of Malaria patients	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.3. By touching utensils that Malaria patients used	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.4. By sharing food with Malaria patients	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.5. By coming close to mosquitoes	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.6. By mosquito bites	☐**A.** Yes / ☐**B.** No / ☐**C.** Don't know
34.7. Other (specify) _____	

Q35 When do you think mosquitoes are the most active? (Choose **one**)

☐**A.** Morning / ☐**B.** Afternoon / ☐**C.** Evening-Night / ☐**D.** Other (specify)_____

Q36 How did you learn about disease transmission?

36.1. Parents ☐**A.** Yes / ☐**B.** No

36.2. School education ☐**A.** Yes / ☐**B.** No

36.3. TV ☐**A.** Yes / ☐**B.** No

36.4. Book/Magazine ☐**A.** Yes / ☐**B.** No

36.5. Microscopist's training ☐**A.** Yes / ☐**B.** No

36.6. Other (specify)_____

Q37 Do you take any preventive measures do you usually take for yourself? (Choose **one**)

☐**A.** Yes (If Yes→Don't ask **Q40**) / ☐**B.** No (If No →**Q40**)

Q38 If Yes, what preventive measures do you usually take for yourself?

38.1. Come back home before dawn

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.2. Wear long-sleeve shirts/pants

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.3. Sleep under bed-nets at home

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.4. Refrain from going to the forest

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.5. Bring hammock nets to the forest

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

38.6. Other (specify)_____

Q39 If Yes, how did you learn about disease prevention

39.1. Parents ☐**A.** Yes / ☐**B.** No

39.2. School education ☐**A.** Yes / ☐**B.** No

39.3. TV ☐**A.** Yes / ☐**B.** No

39.4. Book/Magazine ☐**A.** Yes / ☐**B.** No

39.5. Microscopist training ☐**A.** Yes / ☐**B.** No

39.6. Other (specify)_____

Q40 If No, why is that you did not take preventive measures against Malaria?

40.1. Because I am not afraid of Malaria ☐**A.** Yes / ☐**B.** No

40.2. Because I have Malaria Immunity ☐**A.** Yes / ☐**B.** No

40.3. Because there is little chance of death from Malaria ☐**A.** Yes / ☐**B.** No

40.4. Because I am not sure what kinds of preventive measures are effective ☐**A.** Yes / ☐**B.** No

40.5. Other ¥(specify)_____

Section 4: Community perception of the Microscopists

Q41 Do you have a Microscopists in your village?

☐**A.** Yes / ☐**B.** No→**END** / ☐C. Don't know→**END**

Q42 Are you satisfied with the work of Microscopists? (Choose **one**)

☐**A.** Very well / ☐**B.** Well / ☐**C.** Reasonable level / ☐**D.** Not so good / ☐**E.** Bad

Q43 Why you choose **Q33**? What was the most important reason? Chose **all** reason)

☐**A.** Quality of treatment provided / ☐**B.** Experience of health provider

☐**C.** Politeness of the provider / ☐**D.** Quality of the equipment

☐**E.** Cost of treatment / ☐**F.** The distance to the provider

☐**G.** Other (specify)_____

Q44 Do you think there is an important difference between the perceptions in the treatment of Microscopist? (For example, by ethnic group, age, sex) (Choose **one**) ☐**A.** Yes / ☐**B.** No→**END**

Q45 If Yes, who are **likely** to get treatment form Microscopists?(Chose **all** person)

☐**A.** Boy/ ☐**B.** Girl / ☐**C.** Men / ☐**D.** Women / ☐**E.** Specific ethnicity (specify)_____

☐**F.** The rich **/** ☐**G.** The poor **/** ☐**H.** Microscopist relatives **/** ☐**I.** Non-relatives of Micorscopist **/**

☐**J.** Other (specify)_____

Q46 If Yes, who are **not likely** getting treatment from Microscopists? (chose every person)

☐**A.** Boy/ ☐**B.** Girl / ☐**C.** Men / ☐**D.** Women / ☐**E.** Specific ethnicity (specify)_____

☐**F.** The rich **/** ☐**G.** The poor **/** ☐**H.** Microscopist relatives **/** ☐**I.** Non-relatives of Micorscopist **/**

☐**J.** Other (specify)_____

Thank you very much for your cooperation!

Appendix 15: Questionnaire for ex-malaria patients (Tagalog)

CODE _

Questionnaire on Malaria (Community-level)

Date

■ Day / Month / Year

■ Starting (time) ■ Ending (time) ➨ Total

: : _____

Section 1: Socio-demographic characteristics

AREA

Q1 Munisipyo _____ **Barangay** _____

PARTICIPANT

Q2 Name (Pangalan)_____(Apelyido)_____

Q3 Edad _____ (taon gulang)

Q4 Kasarian ☐Lalaki / ☐Babae

Q5 Hanapbuhay (Pumili ng **isa**. Kung mahigit sa dalawa, markahan ang mas may mahabang oras na ginugugol)
☐Magsasaka, pala / ☐magsasaka, sa niyugan /☐Mangingisda/ ☐May ari ng tindahan o nagbabantay / ☐ Turista / ☐manggagawa / ☐kawani / ☐/maybahay / ☐Barangay Kagawad / ☐Guro sa pampublikong paaralan / ☐Iba pa (specify)_____

Q6 Katayuan sa buhay(pumili ng isa) ☐Di nagasawa / ☐may asawwwa / ☐hiwalay / ☐balo

Q7 Relihiyon (pumili ng isa) ☐Katoliko Romano / ☐Muslim / ☐Tradistional animisya / ☐Baptist Baptist / ☐Iba pa _____

Q8 Etniko (pumili ng isa)
☐Cuyunon (Cuyunan) / ☐Tagalog / ☐Hiligaynon (Ilonggo) / ☐Palawan(Pinalawon, Palawanon) / ☐Mindanao / ☐Cebuano / ☐Ilocano / ☐Bisaya (binisaya) / ☐Kagayanan / ☐Tagbanwa / ☐Iba pa(specify) _____

Q9 Natapos sa pag-aaral (pumili ng isa)
☐No grade completed / ☐Elementary Grade / ☐High school Year / ☐College Year / ☐Higher
Walang natapos/ Mababang paaralan/ mataas na paaralan/ Kolehiyo/mas mataas sa Kolehiyo

Kabahayan

Q10 Ilan ang nakatira sa inyong kabahayan? _____person

Q11 Ilan ang bata _____person

Q12 Anong uri ng nga pasilidad na pangkalusugan malapit sa inyong tirahan? Kung Ilang minuto ang layo sa inyong tirahan?

Q12-1	Albularyo	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-2	Satellite Clinic	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-3	RHU	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-4	Microscopist	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-5	Pribadong Klinika/doctor	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-6	Pribadong parmasiya	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-7	Nagbebenta ng gamut	☐A. Oo (_____minuto) / ☐B. Hindi
Q12-8	Klinika ng NGO o Hospital	☐A. Oo (_____minuto) / ☐B. Hindi

*

Q13 Ang inyo bang tahanan ay mayroong mga susumusunod ng kagamitan?

Q13-1	Elektrisidad	☐A. OO/ ☐B. Hindi
Q13-2	Radyo	☐A. OO/ ☐B. Hindi
Q13-3	Telebisyon	☐A. OO/ ☐B. Hindi
Q13-4	Reprigerator	☐A. OO/ ☐B. Hindi
Q13-5	Bisikleta	☐A. OO/ ☐B. Hindi
Q13-6	Motorsiklo	☐A. OO/ ☐B. Hindi
Q13-7	Bisikleta na may side-car	☐A. OO/ ☐B. Hindi
Q13-8	Il Ang tahanan ay gawa sa Yero at semeı	☐A. OO/ ☐B. Hindi

Section 2: Health seeking behavior

Q14 Sino sa Miyembro ng pamilya ang nagkalagnat ng mga nakaraang ilang araw? (pumili ng isa)

☐**A.** ang Iyong sarili

☐**B.** ang iyong asawa (_____years old)

☐**C.** ang iyong anak (_____years old)

☐**D.** Ibang /sino _____ (_____years old)

Q15 Kailan itong nakaraang lagnat? _____araw

Q16 Kayo ba o ang miyebro ng pamilya ay nakaramdam ng ibang simtomas maliban sa lagnat?

Simtomas		**That episode**
Q16-1	Sakit ng tiyan	☐A. OO/ ☐B. Hindi
Q16-2	Pagtatae	☐A. OO/ ☐B. Hindi
Q16-3	Naduduwal	☐A. OO/ ☐B. Hindi
Q16-4	Sakit ng Ulo	☐A. OO/ ☐B. Hindi
Q16-5	Panginginig	☐A. OO/ ☐B. Hindi
Q16-6	Walang malay	☐A. OO/ ☐B. Hindi
Q16-7	Pagpapawis	☐A. OO/ ☐B. Hindi
Q16-8	Kombulsiyon	☐A. OO/ ☐B. Hindi
Q16-9	Pamumutla	☐A. OO/ ☐B. Hindi
Q16-10	Iba pa (specify)_____	☐A. OO/ ☐B. Hindi
Q16-11	Di alam	☐A. OO/ ☐B. Hindi

Q17 Noon bang nagkalagnat ang sinuman sa pamilya, kayo ba kumunsulta sa iba?

☐**A.** OO/ ☐**B.** Hindi **(tumungo sa Q20)** / ☐**C.** Di alam **(tumungo sa Sec 3)**

Q18 Saan kayo unang kumunsulta o humingi ng payo? (pumili ng isa)

☐**A.** Albularyo/ ☐**B.** Satellite Clinic / ☐**C.** RHU

☐**D.** Microscopist / ☐**E.** Pribadong Klinik/ doktor / ☐**F.** pribadong parmasiya ☐**G.** sa mga nagbebenta ng gamot/ ☐**H.** Klinika o hospital ng NGO/ ☐**I.** Kaibigan/ ☐**J.** Kapitbahay

☐**K.** Di alam / ☐**L.** Iba pa (specify)_____

Q19 Ano ang dahilan kung bakit ka pumunta sa…. (**sagot sa Q18**) pumili ng lahat na sasabihin

☐**A.** Paraan ng paggamot na ibinigay/ ☐**B.** provider Karanassan ng nagbigay lunas

☐**C.** Magalang ang nagbigay lunas / ☐**D.** May mahusay na kagamitan ☐**E.** Ang mga gamot ay mura o libre/ ☐**F.** Malapit lang sa / ☐**G.** Iba pa (specify)_____

Q20 Sino ang nagdesisyon para magpatingin o pumunta sa (**sagot sa Q18**) o hindi magpagamot (pumili ng isa)

☐**A.** Ang pasyete mismo ☐**B.** Ang Tatay ng pasyente

☐**C.** Ang nanay ng pasyente / ☐**D.** Anak ng pasyente

☐**E.** Iba pa (specify)_____

Q21 Gaano na katagal na nilalagnat bago nakatanggap ng gamot? (pumili ng isa)

☐**A.** Parehong araw na nakaramdam ng sakit

☐**B.** Sumunod na araw

☐**C.** Makalipas ang 2 araw ng magsimula ang karamdaman

☐**D.** 3 o higit pang araw ng magsimula ang karamdaman

☐**E.** Di alam o di matandaan

☐**F.** Di ginamot

Q22 Ang tao bang nagkalagnat ay kamakailan ay nagpasuri ng dugo para sa malaria? (pumili ng isa)

☐**A.** OO, paggamit ng 'dipstick"

☐**B.** Oo, sa pamamagitan ng pagsilip sa microscope

☐**C.** OO, di alam ang paraan o nakalimutan

☐**D.** Hindi (**Tumungo sa Q25)**

☐**E.** Di alam, di matandaan

Q23 Saan kayo nag pasuri ng dugo?

☐**A.** Albularyo / ☐**B.** Satellite Clinic / ☐**C.** RHU

☐**D.** Microscopist / ☐**E.** Pribadong klinika/doktor/ ☐**F.** Pribadong parmasiya ☐**G.** Nagbebenta ng gamot/ ☐**H.** Klinik o hospital ng NGO/ ☐**I.** Kaibigan/ ☐**J.** Kapitbahay

☐**K.** Di alam / ☐**L.** Iba pa (specify)_____

Q24 Ano ang resulta? (pumili ng isa)

☐**A.** Negative **/** ☐**B.** Positive **/** ☐**C.** Di madiagnose / ☐**D.** Hindi nagpatingin ng dugo/ ☐**E.** Di alam

Q25 Kayo o miyebro ban g pamilya ay na (pumili ng isa)

☐**A.** Oo **/** ☐**B.** Hindi **/** ☐**C.** Di madiagnose / ☐**D.** Hindi nagpatingin ng dugo/ ☐**E.** Di alam

Q26 Paano nalaman na may lagnat ? (pumili ng isa)

☐**A.** SA paghipo sa katawan/ ☐**B.** Sa paggamit ng termometro / ☐**C.** Di nalaman na may lagnat/ ☐**D.** Iba pa (Specify) _____

Q27 Uminom ban g gamut para sa malaria? (pumili ng isa)

☐**A.** OO / ☐**B.** Hindi / ☐**C.** Di alam o nakalimutan

Q28 May roon nab a kayong gamut para sa malaria sa inyong tahanan? (pumili ng isa)

☐**A.** OO / ☐**B.** Hindi/ ☐**C.** Di alam o nakalimutan

Q29 Nakainom na ba ng gamut para sa malaria bago nagpakunsulta o nagpagamot. (pumili ng isa)

☐**A.** OO / ☐**B.** Hindi / ☐**C.** Di alam o nakalimutan

Q30 Sino ang nagpayo na uminom ng gamut para sa malaria? (pumili ng isa)

☐**A.** Albularyo/ ☐**B.** Satellite Clinic / ☐**C.** RHU

☐**D.** Microscopist / ☐**E.** Pribadong klinika o doktor/ ☐**F.** Pribadong parmasiya ☐**G.** nagbebenta ng gamot / ☐**H.** Klinika o hospital ng NGO/ ☐**I.** Kaibigan/ ☐**J.** Kapitbahay ☐**K.** Di nakainom ng gamot para sa malaria / ☐**L.** Di alam / ☐**M.** Iba pa (specify)_____

Q31 Anu-anong gamot laban sa malaria ang naimon? Markahan ang lahat na sasabihin

☐**A.** Artemisinin / ☐**B.** Artemether / ☐**C.** Aetesunate

☐**D.** Chloroquine / ☐**E.** A+M / ☐**F.** Fansidar

☐**G.** Mefloquine / ☐**H.** Malarine / ☐**I.** Paracetamol

☐**J.** Primaquine / ☐**K.** Tetracycline

☐**L.** Vitamins / ☐**M.** Iba pa (specify)_____

☐**O.** Don't know Di alam

Q32 Natatandaan ba ninyo kung Ilang araw na inimon ang mga gamot? (pumili ng isa)

☐**A.** Oo (_____days) / ☐**B.** nakalimutan / ☐**C.** Hindi uminom ng gamot.

Q33 Pinayuhan ba kayo ng inyong kinunsulta ng mga sumusunod?

33.1. Kung kailang dapat inumin ang gamot para sa malaria	☐A. Oo / ☐B. Hindi
33.2. Mga epekto o mararamdaman sa paginom ng gamot	☐A. Oo / ☐B. Hindi
33.3. Ang kabutihang dulot kung iinumin lahat ang gamot	☐A. Oo / ☐B. Hindi
33.4. Ano ang dapat gawin kung hindi bumuti o gumaling sa sa	☐A. Oo / ☐B. Hindi

Q34 Gumaling ba o bumuti ang lagay pagkatapos kumunsulta sa unang kinunsulta? (pumili ng isa)

☐**A.** Oo **(Tumungo sa Sec 3)** / ☐**B.** Hindi / ☐**C.** Di alam

Q35 Kumunsulta ba kayo sa iba pa? (pumili ng isa)

☐**A.** Oo / ☐**B.** Hindi **(Tumungo sa Q38**) / ☐**C.** Di alam o Nakalimutan

Q36 Kanino kayo kumunsulta sa ikalawang pagkakataon? **(Tumungo sa Q 39)** (pumili ng isa)

☐**A.** Albularyo / ☐**B.** Satellite Clinic / ☐**C.** RHU

☐**D.** Microscopist / ☐**E.** Pribadong Klinika o doktor / ☐**F.** Pribadong Parmasiya

☐ **G.** Nagbebenta ng gamot / ☐**H.** Klinika o doktor ng NGO/ ☐**I.** Kaibigan/ ☐**J.** Kapitbahay

☐**K.** Hindi kumunsulta sa ikalawang pagkakataon **(Tumungo sa Q 37)**/ ☐**L.** Di alam

☐**M.** Iba pa (specify)_____

Q37 Kanino kayo kumunsulta sa ikatlong pagkakataon? (pumili ng isa)

☐**A.** Albularyo / ☐**B.** Satellite Clinic / ☐**C.** RHU

☐**D.** Microscopist / ☐**E.** Pribadong klinika o doktor / ☐**F.** Pribadong Parmasiya

☐**G.** Nagbebenta ng gamot / ☐**H.** Klinika o doctor ng NGO / ☐**I.** Kaibigan / ☐**J.** Kapitbahay

☐**K.** Hindi kumunsulta sa ika-3 pagkakataon / ☐**L.** Di alam / ☐**M.** Iba pa (specify)_____

Q38 Bakit di kayo kumunsulta sa iba.? (pumili ng isa)

☐**A.** Hindi na kumunsulta sa iba

☐**B.** Walang sapat na pera o masyadong mahal

☐**C.** Malayo

☐**D.**Gumaling kaagad

☐**E.** Iba pa (specify)_____

Q39 Anong klaseng gamot ang inyong tinanggap?

☐**A.** IM injection

☐**B.** IV infusion

☐**C.** Plants **(Tumungo sa Q 40)**

☐**D.** Traditional Medicine **(Tumungo sa Q 41)**

☐**E.** Iba pa (specify)_____

☐**F.** Di alam

Q40 Anong klaseng halaman ang inyong ginamit?

☐**A.** Anona reticulata (custard apple)

☐**B.** Areca catechu (areca of betelnut palm)

☐**C.** Quisqualis indica (niyog-niyogan or Chinese honeysuckle)

☐**D.** Leucaena leucocephala (ipil-ipil)

☐**E.** Carica papaya (papaya)

☐**F.** Cassia alata (alapulko or ringworm bush)

☐**G.** Ananas comosus (pinya or pineapple)

☐**H.** Iba pa (specify)_____

☐**I.** Did not had any plants for the treatment

☐**J.**Di alam

Q41 What kind of Traditional medicine did you use?

☐**A.** Melaleuca leucadendron (cajeput oil tree)

☐**B.** Tinospora crispa (makabuhay)

☐**C.** Phyllanthus nirui (sampasampalukan or egg woman)

☐**D.** Cissampelos pareira (sinsaw-sinsawan)

☐**E.** Gliricidia sepium (kakawati)

☐**F.** Cassia alata (akapulko or ringworm bush)

☐**G.** Plumeria acutifolia (kalatsutsi or frangipani)

☐**H.** Anona squamosa (atis or custard apple).

☐**I.** Iba pa (specify)_____

☐**J.** Didn't use any traditional medicine

☐**K.** Di alam

Section 3: Knowledge of Malaria Epidemiology and Prevention

Q42 Alam nap o ba ninyo ang tungkol sa malaria?

☐**A.** Oo **(Tumungo sa Q43**) / ☐**B.** Hindi (Tumungo sa Sec 4) / ☐**C.** Di alam (**Tumungo sa Sec 4)**

Q43 Anu-ano ang simtomas ng malaria?

Q43-1	Sakit ng tiyan	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-2	Pagtatae	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-3	Pagduduwal	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-4	Lagnat	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-5	Panginginig	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-6	Walang malay	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-7	Pagpapawis	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-8	Kumbulsiyon	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-9	Pamumutla	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q43-10	Iba pa (specify)_____	☐**A.** Oo / ☐**B.** Hindi
Q43-11	Di alam	☐**A.** Oo / ☐**B.** Hindi

Q44 Paano nakukuha ang sakit na malaria?

Q44-1	Sa pag-ubo at bahin ng may sakit ng malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-2	Sa paghawak ng dugo ng may sakit ng malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-3	Sa paghawak ng mga gamit ng may sakit ng malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-4	Makisalo sa pagkain ng may sakit ng malaria	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-5	Sa paglapit sa lamot	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-6	Kagat ng lamok	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q44-7	Iba pa (specify) _____	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam

Q45 Alam ba ninyo kung anong klase ng lamok ang nagdadala ng ı

Q45-1	Lalaking Culex	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q45-2	Babaeng Culex	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q45-3	Lalaking Anopheles	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q45-4	Babaeng Anopheles	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q45-5	Lalaking Aedes	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam
Q45-6	Babaeng Aedes	☐**A.** Oo / ☐**B.** Hindi / ☐**C.**Di alam

Q46 Kailan sa tinging ninyo kumakagat ang nga lamok na nagdadala ng malaria ? (pumili ng isa)

☐**A.** Umaga/ ☐**B.** Hapon/ ☐**C.** gabi / ☐**D.** Iba pa(specify)_____

Q47 Paano ninyo nalaman ang tungol sa pagkalat ng sakit na malaria?

Q47-1 Magulang	☐**A.** Oo / ☐**B.** Hindi
Q47-2 Sa paaralan	☐**A.** Oo / ☐**B.** Hindi
Q47-3 Telebisyon	☐**A.** Oo / ☐**B.** Hindi
Q47-4 Libro o mga babasahin	☐**A.** Oo / ☐**B.** Hindi
Q47-5 Babasahin na ipinamimigay, nga patalastas	☐**A.** Oo / ☐**B.** Hindi
Q47-6 Iba pa (specify)_____	☐**A.** Oo / ☐**B.** Hindi

Q48 Kayo ba ay gumagamit ng paraan upang umiwas sa sakit na malaria? (pumili ng isa)

☐**A.** Oo / ☐**B.** Hindi **(Tumungo sa Q51**)

Q49 Anu-anong mga paraan ang inyong ginagamit?

Q49-1 Bumabalik sa bahay bago gumabi

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-2 Pagsusuot ng damit/ polo na mahabang mangas/pantalon

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-3 Pagtulog sa loob ng kulambo

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-4 Pag-iwas sa pagpunta sa gubat

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-5 Magdala ng kulambo kung pupunta sa gubat

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-6 Paglagay ng nga kitikiti sa sapa

☐**A.** Always / ☐**B.** Most of the time / ☐**C.** Sometimes / ☐**D.** Rarely / ☐**E.** Never

Q49-7 Iba pa (specify)_____

Q50 Saan ninyo nalaman ang mga paraan sa pag-iwas sa sakit na malaria?

Q50-1 Magulang	☐**A.** Oo / ☐**B.** Hindi
Q50-2 Sa paaralan	☐**A.** Oo / ☐**B.** Hindi
Q50-3 Telebisyon	☐**A.** Oo / ☐**B.** Hindi
Q50-4 Libro/ babasahin	☐**A.** Oo / ☐**B.** Hindi
Q50-5 Babasahin na ipinamimigay, nga patalastas	☐**A.** Oo / ☐**B.** Hindi
Q50-6 Iba pa (specify)_____	☐**A.** Oo / ☐**B.** Hindi

Q51 Bakit hindi kayo gumagamit ng mga pamamaraan sa pag-iwas sa sakit na malaria?

Q51-1. Dahil hindi ako natatakot sa sakit na malaria ☐**A.** Oo / ☐**B.** Hindi / ☐**C.** I took preventative measures

Q51-2. Dahil meron akong panaggalang laban sa malaria ☐**A.** Oo / ☐**B.** Hindi / ☐**C.** I took preventative measures

Q51-3. Dahil konti lang ang namamatay s malaria ☐**A.** Oo / ☐**B.** Hindi / ☐**C.** I took preventative measures

Q51-4. Dahil hindi ako sigurado kung alin sa mga pamamaraan ng pag-iwas ang epektibo
☐**A.** Oo / ☐**B.** Hindi / ☐**C.** I took preventative measures

Q51-5. Iba pa (specify)_____

Section 4: Community perception of the Microscopists

Q52 Mayroon ba kayong barangay microscopists? (pumili ng isa)
☐**A.** Oo→**Q66** / ☐**B.** Hindi →**Q71**/ ☐C. Di alam →**Q71**

Q53 Kayo ba ay kontento sa serbisyo ng inyong microscopists?
☐**A.** Very well / ☐**B.** Well / ☐**C.** Reasonable level / ☐**D.** Not so good / ☐**E.** Bad

Q54 Bakit ninyo pinili ang nasa **Q23**? Ano ang pinakaimportanteng dahilan?
☐**A.** Kalidad ng paggamot / ☐**B.** Karanasan / ☐**C.** magalang ☐**D.** kalidad ng mga kagamitan/ ☐**E.** Halaga ng paggamot / ☐**F.** Distansya/ ☐**G.** Iba pa (specify)_____

Q55 SA inyong palagay, mayroon bang pagkakaiba ang pagbibigay lunas ng microcopist sa mga taga barangay? Halimbawa: sa mga netibo o ethnilko o isang grupo (pumili ng isa) ☐**A.** Oo / ☐**B.** Hindi→**END**

Q56 Kung OO sino ang mas makakatanggap ng lunas mula sa microscopists?
☐**A.** Boy/ ☐**B.** Girl / ☐**C.** Men / ☐**D.** Women / ☐**E.** Specific ethnicity (specify)_____
☐**F.** The rich **/** ☐**G.** The poor **/** ☐**H.** Microscopist relatives **/** ☐**I.** Non-relatives of Micorscopist **/**
☐**J.** Other (specify)_____

Q57 Kung Hindi, sino ang hindi makakatanggap ng lunas mula sa microscopists?
☐**A.** Boy/ ☐**B.** Girl / ☐**C.** Men / ☐**D.** Women / ☐**E.** Specific ethnicity (specify)_____
☐**F.** The rich **/** ☐**G.** The poor **/** ☐**H.** Microscopist relatives **/** ☐**I.** Non-relatives of Micorscopist **/**
☐**J.** Other (specify)_____

Q58 May gusto pa ba kayong isabihin?

_____

_____

_____

SALAMAT PO SA INYONG PANAHON

Appendix 16: Ethical approvals from the Research Ethics Committee of the Graduate School of Medicine of the University

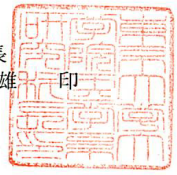
様式第２号

倫　理　委　員　会
審 査 結 果 報 告 書

平成２２年５月１７日

申請者
国際地域保健学
教授
神馬　征峰　殿

東京大学大学院医学系研究科長・医学部長
清水　孝雄　印



審査番号　3001
研究課題　マラリア対策を介した保健システム強化；フィリピン・パワラン島における顕微鏡検査技師の役割

上記研究計画を平成２２年５月１７日の委員会で審査し下記のとおり判定しました。
ここに通知します。

判　定 ○承認する。　　承認しない。 条件付きで承認する。　　該当しない。 変更を勧告する。
条件あるいは変更勧告の理由（細則第３条第２項）

Appendix 17: A photograph of the first trained microscopist (right) in Palawan, examining blood-smear of febrile patients in the village