

## **Epidemiological, sociological and cultural baseline data in using a bednet of migrant workers at Bothong District, Chonburi Prevince.**

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*Failing the development of safe, effective, and long lasting prophylactic agents, integrating the use of impregnated nets with large-scale primary health care programs the most cost-effective method for controlling malaria at Bothong District, Chonburi province. Before launching the program, we wanted to study the epidemiological, sociological and cultural baseline data for better understanding of the effectiveness of this vector control method. A health interview survey was made of the 89 seasonal migrant workers and the 127 long-term migrant workers. The workers, most of whom were young male, of northeastern origin, had moved from their non-malarious native hometowns to work in the malarious district of Bothong. Malaria is an important health problem for such population of workers. Most of them gave the history of sleeping in a net and had a good perception of the benefits of the use of the nets. They preferred rectangular nylon with overlapping entrance flap on one side with dark colour. From this baseline data, it has been easier to adapt the material, model, size and colour of the nets in our program to local preferences to enhance subject compliance.*

*Key words: Epidemiological, Sociological and cultural, Baseline data, Usings bednet.*

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บดี ณะมัน, ภิรมย์ กมลรัตนกุล. ข้อมูลพื้นฐานทางระบาดวิทยาสังคมและวัฒนธรรมเกี่ยวกับการใช้มุ้งที่อำเภอบ่อทอง จังหวัดชลบุรี. จุฬาลงกรณ์เวชสาร 2534 กรกฎาคม; 35(7): 429-436

เนื่องจากในปัจจุบันยังไม่มียาป้องกันไข้มาลาเรียที่เหมาะสม ดังนั้นมาตรการในการใช้มุ้งชุบน้ำยาผสมผสานไปกับงานสาธารณสุขมูลฐานน่าจะเป็นกลยุทธ์ที่มีต้นทุนประสิทธิผลต่ำในการควบคุมไข้มาลาเรียที่อำเภอบ่อทอง จังหวัดชลบุรี อย่างไรก็ตาม ก่อนที่จะเริ่มดำเนินการในโครงการนี้ คณะผู้วิจัยได้มีการสำรวจข้อมูลพื้นฐาน ทั้งในด้านระบาดวิทยา สังคมและวัฒนธรรมเกี่ยวกับการใช้มุ้งดังกล่าว โดยการสัมภาษณ์คนงานที่อพยพมาทำงานชั่วคราว จำนวน 89 คน และคนงานประจำ 127 คน จากการศึกษาพบว่า คนงานส่วนมากเป็นชายลกรรจ้ออพยพมาจากภาคอีสาน และพบว่ามาลาเรียเป็นปัญหาสาธารณสุขที่สำคัญของคนงานกลุ่มนี้ นอกจากนี้ยังพบว่า คนงานเหล่านี้ส่วนมากก็นอนในมุ้งอยู่แล้ว และมีทัศนคติที่ดีต่อประโยชน์ของการนอนในมุ้ง นอกจากนี้ยังพบว่า คนงานเหล่านี้ชอบมุ้งที่มีลักษณะเป็นรูปทรงสี่เหลี่ยมผืนผ้า ทำด้วยไนลอนมีทางเปิดเข้าออกที่ด้านหนึ่ง และชอบสีคล้ำ ผลจากการวิจัยนี้จะสามารถนำไปประยุกต์ในการนำมุ้งชุบน้ำยาเข้ามาใช้ในคนงานกลุ่มนี้ต่อไป โดยพยายามเลือกให้สอดคล้องกับความพอใจของคนงานเหล่านั้น เพื่อเพิ่มความร่วมมือในโครงการนี้

Malaria is a serious health problem in Thailand.<sup>(1)</sup> At present there are three major problems confronting the Anti-Malaria Program.<sup>(2)</sup> These include the rapid dissemination of *P. falciparum* strains highly resistant to both 4-aminoquinolines and sulfadoxine/pyrimethamine drugs, the exophilic behavior of malaria vectors, and occupational migration of the people. The control of malaria vectors by house spraying with residual insecticides has encountered serious setbacks for various reasons. Locally appropriate vector control technologies must be developed.<sup>(3)</sup> More emphasis needs to be placed on organizational, economic and cultural aspects : innovative cost-effective vector control measures should be sought for use by communities as part of a primary health care strategy. Vector control methods such as the use of mosquito nets have recently received more attention because it is simple and effective means of personal protection. Although a bed net is a potentially excellent anti-malaria measure, it may soon become torn or may not be properly tucked in. Interest has increased lately in the idea of using impregnated net as a method of malaria control<sup>(4,5)</sup> because of several advantages such as the low cost, no need for special equipment, less organizational and logistical problems and the need for less insecticide. Moreover, in Thailand, we can find a large local availability of cheap mass produced mosquito nets. The different social, cultural and epidemiological conditions make it necessary to design a strategy according to local circumstances in order to obtain the most acceptable and cost-effective control method. In response to this the objective of this study was to study the baseline data of these parameters for better understanding of the effectiveness of this vector control method before launching the program.

## MATERIALS & METHODS

### 1. The Sample

The sample in this study comprised of two groups :

#### 1.1) Seasonal agricultural migrant workers

These were workers who temporarily migrated to cut sugarcane during the 3-month cutting season (December through March)

#### 1.2) Long-term Migrant Workers

These were workers who migrated to work in the study area for more than 6 months prior to interview.

### 2. Study area selection

Bothong District, located in Chonburi Province 87 Kms southeast of Bangkok, was selected since it is known to be a highly endemic malarious area and there are a large number of migrant workers who migrated from the north-east region to work as agricultural workers.

### 3. Baseline assessment

#### 3.1) Epidemiological baseline data

The name, age, sex, marital status, educational level, place of origin, occupation, past history of malaria illness, previous exposure to anti-malarial drugs were recorded using health interview surveys.

A malaria thick blood smear was performed for all subjects. If the slide was positive, the subject would receive radical treatment. Those with *falciparum* parasitaemias would be given a therapeutic dose of 3 tablets of MSP (mefloquine -sulfadoxine -pyrimethamine) in a single dose, while those with *vivax* parasitaemias would be treated with the standard regimen of chloroquine (1,500 mgs over a three day period), follow by primaquine, 15 mgs daily for 15 days and then included in the study.

#### 3.2) Social and cultural baseline data

Questionnaires in assessing these aspects were also carried out, including a survey of knowledge, attitude and perceptions of malaria prevention measures, sleeping behavior, time spent at night per age group (outdoors, indoors for other purposes), the actual practice of using a net, proper use of the net before sleeping, condition of the net at daytime (rolled up or left down), acceptance of nets (reason of using or not using a net), perception of the benefits and barriers in the use of mosquito nets, type of nets preferred (shape, material, model, colour and size), acceptance of insecticide treatment, affordability and washing of nets.

## RESULTS

### 1. Epidemiological baseline data

#### 1.1) Age and Sex distribution

a) Age and sex distribution of the 138 seasonal migrant workers and their families were shown in Figure 1. Sixty-eight percent were male and thirty-two percent were female. The male to female sex ratio was 2.1 : 1. Half of them were young adults (16-30 years old), nine percent were children below 5 and twenty-two percent were children below 15.

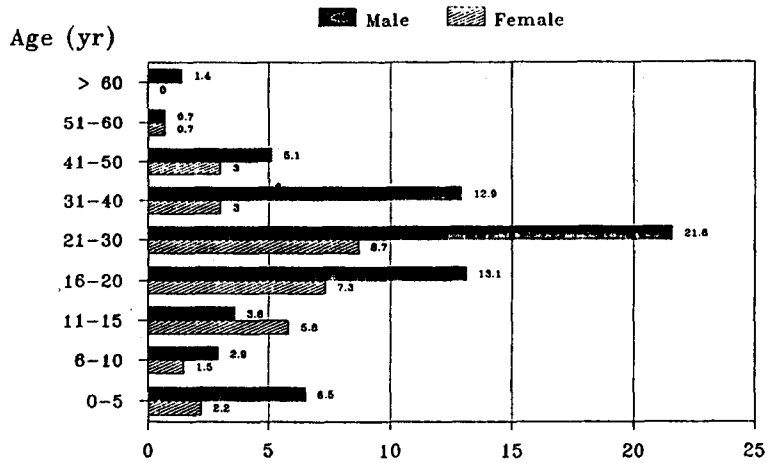


Figure 1. Age & Sex distribution of the 138 seasonal migrants.

b) Age and sex distribution of the 261 long-term migrant workers and their families were shown in Figure 2.

Fifty-nine percent were male and forty-one percent were female. The male to female sex ratio were 1.4 : 1.

A quarter of them were young adults. Twenty percent were children below 5 and forty percent were children below 15.

1.2) Marital Status

Most of seasonal and long-term migrant were married (Figure 3).

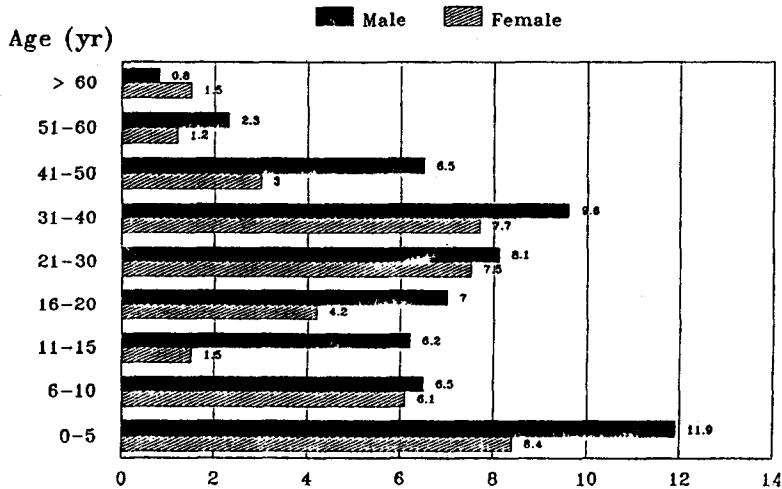


Figure 2. Age & Sex distribution of the 261 long-term migrants.

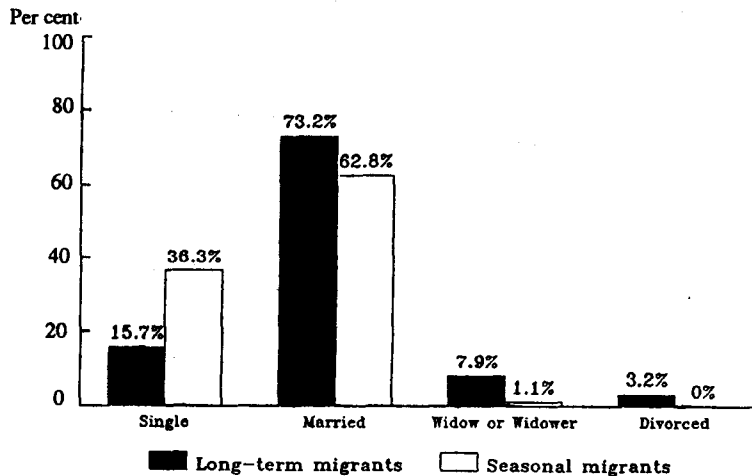


Figure 3. Marital status.

### 1.3) Educational Level

Most subjects (66% in seasonal migrants and 78% in long-term migrants) finished grade-four level

and more than twenty percent of long-term migrant had no formal education (Figure 4).

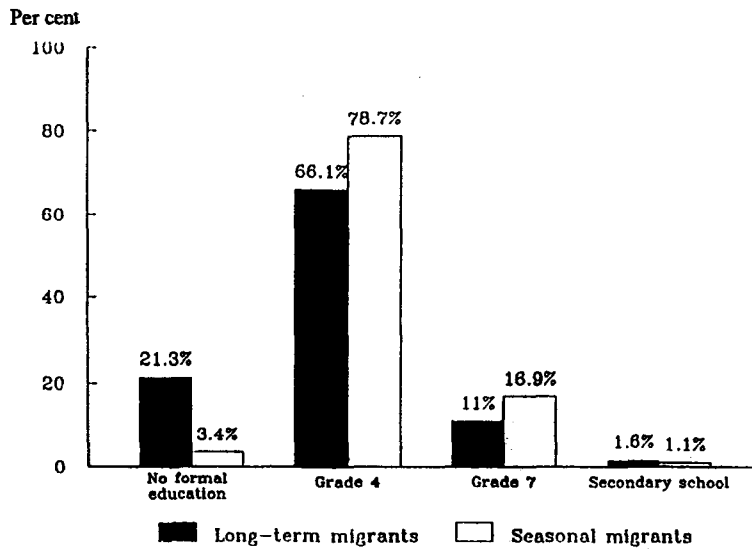


Figure 4. Educational level.

### 1.4) Place of Origin

Most workers were northeastern farmers who had moved from their non-malarious native hometowns to the highly malarious district of Bothong.

### 1.5) Past History of Malaria Illness

Approximately sixty percent of the workers had malarial illness in the past in both groups : while, forty percent of the seasonal migrant workers had previous employment at Bothong District.

### 1.6) Previous Exposure to Anti-malarial Drugs

Most of the long-term migrants (94.5%) had

never received any chemoprophylaxis against malaria.

## 2. Social and cultural baseline data

### 2.1) History of Sleeping in a net

Eighty-seven percent of long-term migrants and seventy-two percent of seasonal migrants gave the history of sleeping in a net every night ; while, four percent of long-term migrants and fifteen percent of seasonal migrants had never slept in a net (Figure 5). When we asked a question about sleeping behavior during the previous night, almost all of the long-term migrants (92.8%) used a net and only seven percent of seasonal migrants used them.

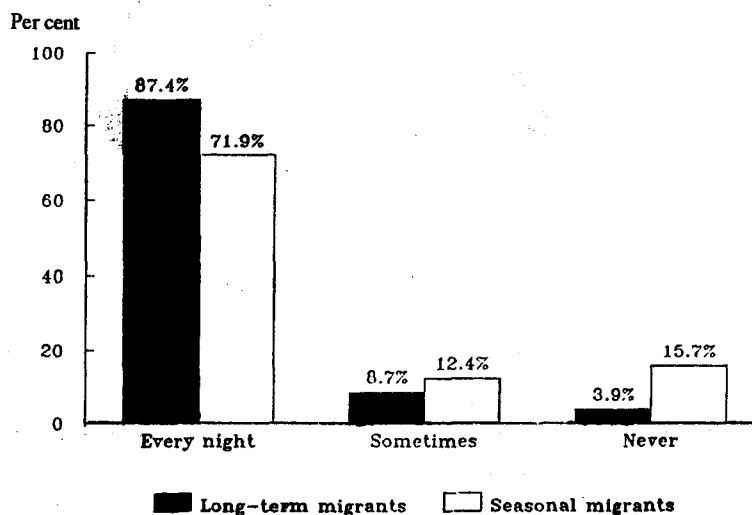


Figure 5. History of sleeping in a net.

### 2.2) Major Reason of Not Using a Net

The major reason of not using a net among seasonal migrants was the uncomfortable feeling (100%). For long-term migrants, two major reasons were, uncomfortable (71.4%) and being hot (28.6%).

### 2.3) The Sleeping Time

Most of the long-term migrants (69.6%)

went to bed at 8 p.m., but fifty-four percent of seasonal migrants slept at 9 p.m. (Figure 6).

### 2.4) Frequency of Washing a Net

The frequency of washing a net was very low, more than 3 years in both groups (Figure 7).

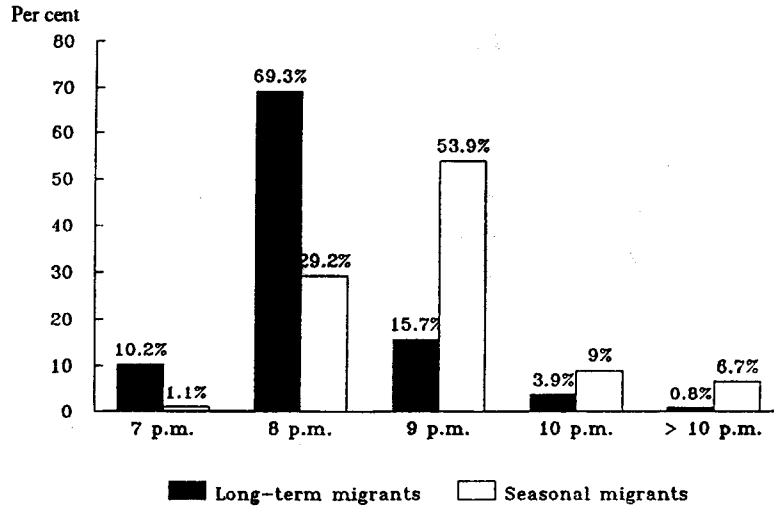


Figure 6. Comparison of the sleeping time.

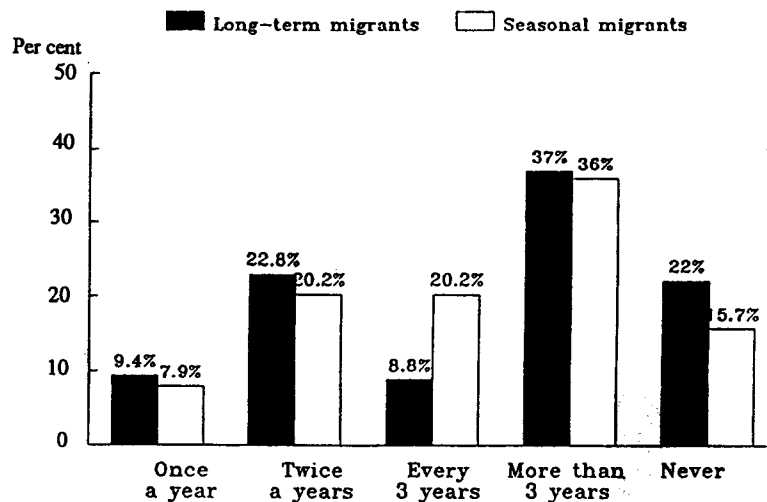


Figure 7. Frequency of washing a net.

### 2.5) Perception of the Benefits in the Use of the Nets

Seasonal migrants had a better perception of the benefits in the use of the nets than long-term migrants (Table 1).

### 2.6) Local Preferences of the Net

We found that most workers preferred rectangular nylon nets with an overlapping entrance flap on one side and a dark colour.

**Table 1.** Comparison in the perception of the benefits in the use of the nets(%) between long-term migrants (N = 127) & seasonal migrants (n = 89)

Perception of the benefits in the use of the nets	Long-term migrants (%)	Seasonal migrants (%)
1. Sleeping in a net keeps one from getting malaria	79.5	98.9
2. Most people get malaria because they don't sleep in a net	81.9	96.6
3. Feel confined when using a net	88.2	88.8
4. No smell when using a net	83.5	78.7
5. Like to sleep in a net	93.7	91.0
6. Sleeping in a net can prevent from being bitten by a mosquito	44.9	64.0

## DISCUSSION

### 1.1) Age and Sex Distribution

Seasonal migrant workers tended to consist of more men because most of them migrated from the northeast to work in sugar-cane plantations which needed men to work.

### 1.2) Social and Cultural Baseline Data

The study of acceptability of nets, types of net preferred, acceptance of insecticide treatment, affordability, washing of nets, the sleeping time etc. has made it easier to adapt the net program planned so as to accept local habits and preferences than to try to change them in favour of a technically optimum form of mosquito protection. The willingness to pay the local market price for mosquito nets increased markedly after inhabitants of villages in the gumbia were given a net and thus learned to appreciate it. Appreciation of bed nets could be enhanced as much as possible by adapting material, model and size of the net to local preferences.

1.2.1) Most seasonal migrants who came from the northeast region of the country where mosquito density was low or not perceived as a problem, did not routinely used nets. They complained that the nets were uncomfortable for them. However, perception of the benefits in the use of the nets among these workers were better than in long-term migrants. The reasons for this difference are not completely clear, but the most plausible explanation may be their previous experiences because sixty percent of seasonal migrant workers had previous employment at Bothong District and sixty percent of them had malarial illness in the past.

1.2.2) The effect of washing on the residual activity of permethrin was not considered to be a

major problem among these subjects because most of them washed a net only one every 3 years.

1.2.3) The net program seems to be an appropriate tool for malaria control among these group of workers because most of them went to bed quite early in the evening so they can avoid being bitten by a mosquito.

1.2.4) The major reasons for not using a net among migrant workers were feeling uncomfortable and being hot. Therefore, in the process of implementation of this program, we have to develop some strategies to avoid these problems.

1.2.5) Mosquito nets in these workers were used for several reasons : privacy, protection against cold, dust, animals and insects.

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