CHAPTER III

PROPOSAL

Training Traditional Birth Attendants as Health Educators: a Strategy for Malaria Control in Pregnant Women, in O' Smarch Village, Samrong District, Oddar Meanchey Province, Cambodia

3.1 Introduction

Malaria is one of the most common and deadly parasite diseases in the world. About 2100 million people over the world are at risk for malaria and more than one million is killing annually. Each year, the world over, malaria destroys through premature death and disability the equivalent of at least 35 million years of health, productive of life. Although more than 80% of malaria cases happen in Africa, but South East Asia has become the most serious anti-malarial drug resistance in the world. This phenomenon also includes Cambodia.

At present, about 18% of entire population or 2 million Cambodian people are at risk of malaria. In 1999, among Mekong sub-region countries, the average clinicalmalaria incidence was about 1-2 cases/1000/pop/year), while in Cambodia was 11-12 cases/1000/pop/year (UNICEF, WHO, RBM, 2000 which is about 10 times over the average. Also spreading of multi- drug resistance and availability of fake drugs covering the whole country has made the malaria situation in Cambodia is worsen.

According to geographic and environment, O'Smarch village, in the northwest of Cambodia is one of the malarious endemic areas. Overall population is at risk of malaria including pregnant women. The statistic reports from Malteser health post found that malaria was one of major health problems for the population here. Also occurrence of multi-drug resistance and fake drug available has been found in this area as well.

The most threatening implications of multi-drug resistance are in the treatment of pregnant women. There is a limited range of anti-malarials that are considered safe for treatment during pregnancy (Mac Gready and Nosten, 1999). In addition, there is no prophylaxis drug which is safe available for them after arising resistance of chloroquine and sulfadoxine-pyrmethamine.

Malaria during pregnancy is a serious threat to mother and fetus. All types of malaria could lead to anemia and fatal in mother or may cause abortion, stillbirth, intrauterine growth retardation and premature labor, which also one of the main reasons for neonatal death. A study done in a hospital in India, there was significantly increased

mortality rate in pregnant females (37.77%) in comparison to non-pregnant females (14.81%) and males (7.64%; $p < 0.001$). Severe anemia with Hemoglobin < 5 gm % was observed more commonly in pregnant patients (20.0%) in comparison to non-pregnant patients (4.11%) (Kochar DK, Thanvi I, et al, 1999).

In endemic areas, malaria in pregnancy is usually asymptomatic and often associated with negative peripheral-blood film. By under this condition, thus screening, prompt treatment and promotion of preventive behaviors should be taken as a matter of routine in all pregnant women who are at risk of infection.

However, in different social context may need different malaria control strategy. Such as personal behavior, community background and environment, these are some factors determine malaria situation and vary from setting to setting. Therefore to address malaria control strategy in each setting, well understanding of people's behaviors and their background, social context and its environment is necessary for a successfully program.

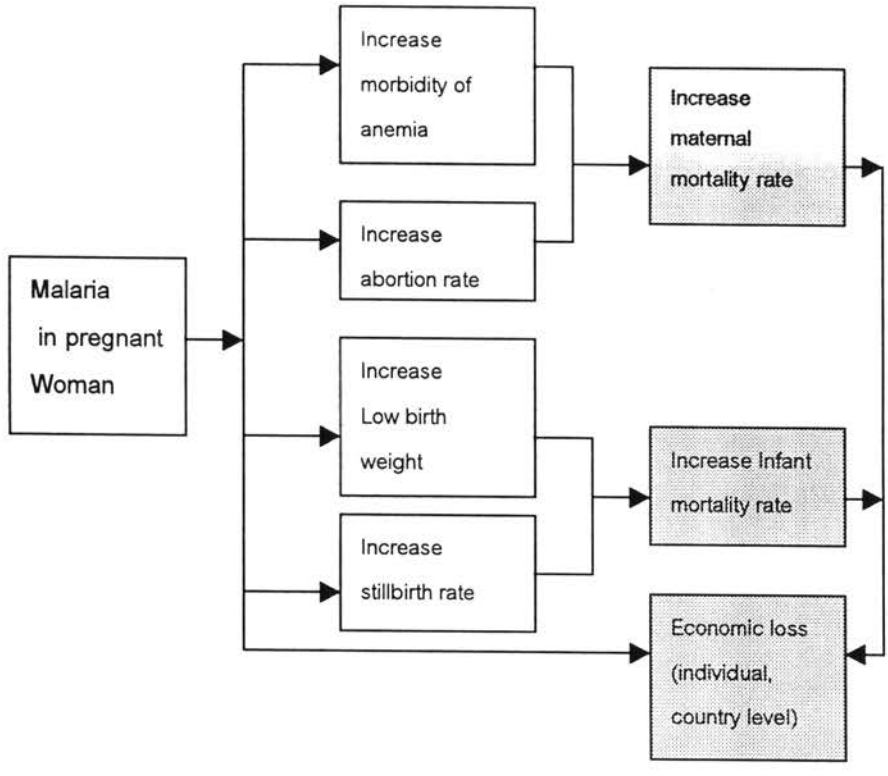
A trial conducted in Kenya demonstrated that intermittent treatment with the anti-malarial sulfadoxine-pyemethamine, given a couple of times during pregnancy when women attend for antenatal care, could reduce severe anemia in primigravida by 39%. The results of this study demonstrate the important contribution of malaria to severe anemia in pregnancy in areas of endemic transmission. Intermittent treatment with SP in pregnancy has also been shown to be effective in improving birth weigh.

Therefore in Kenya, intermittent SP is now a policy for pregnant women from malarious areas (Shulman, 1999).

Although this policy has been proved that effective for malaria control in pregnancy in Kenya. However, the occurrence of multi-drugs resistance in the northwest of Cambodia has made this policy become impossible. The situation of drug resistance, in areas near the borders with Cambodia and Mynmar, P. falciparum infections do not respond to treatment with chloroquine or sulfadoxine-pyremethamine, and sensitivity to quinine is reduced. Treatment failure of over 50% with mefloquine are also being reported. Therefore in these situations, chemoprophylaxis with doxycycline is recommended for personal protection measures. However, doxycycline is contraindicated in pregnant women and children under the age of 8 years, therefore there is no prophylaxis regimen that is both effective and safe for these groups in areas of multi-drugs resistance malaria (WHO, 2000).

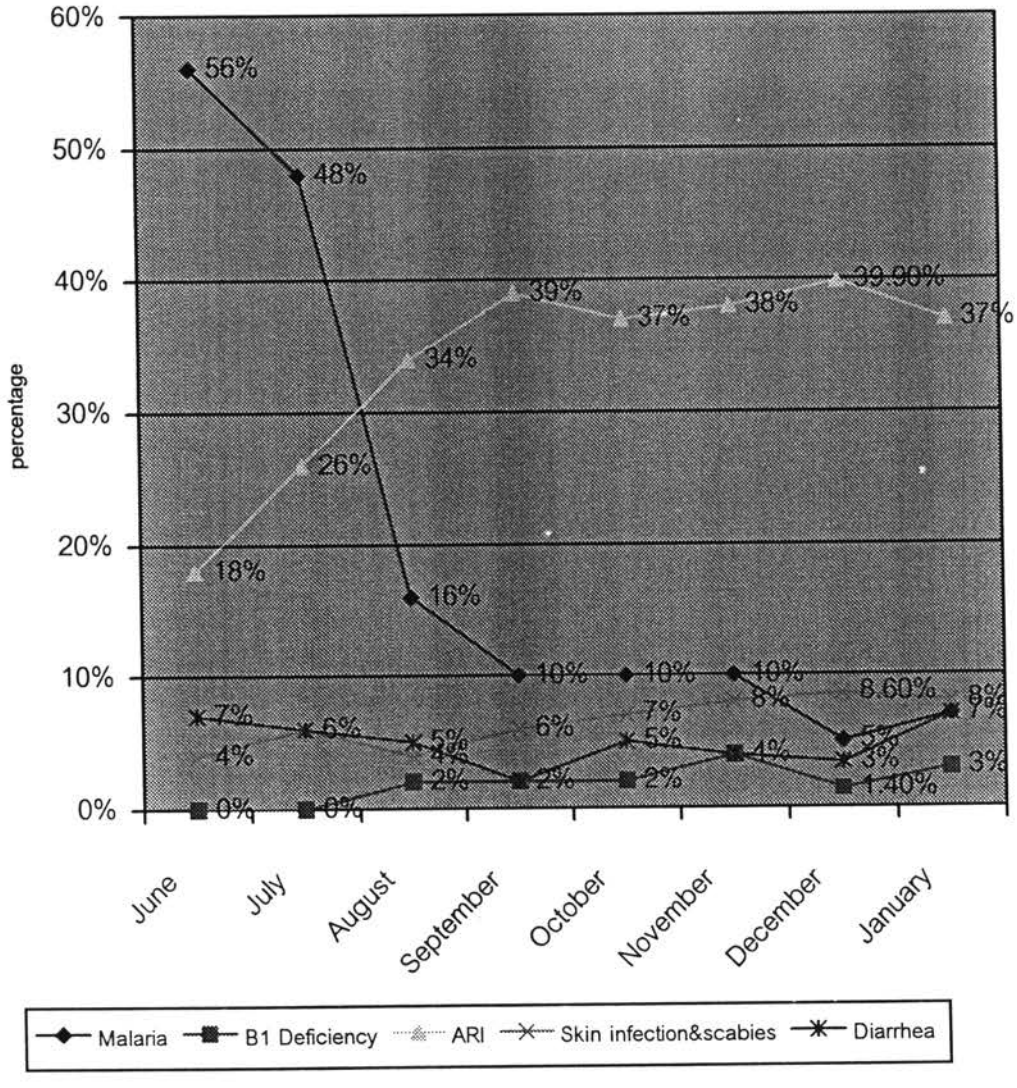
Consequence of malaria in pregnant women are more severe than any other groups, also infant born to mothers with malaria are more likely to have low birth weight (LBW) and LBW is the single greatest of life risk factor for death during the first month (RBM, 2000). Hence the priority for malaria control will be pointed at this particular group in this study.

Figure 1: The consequence of malaria in pregnant women



In this chapter I aim to describe about the proposed malaria control strategy; by using health education by mobilizing community through training Traditional Birth Attendance (TBA) as a Community Health Educator for promotion of preventive behaviors and change treatment seeking behaviors in pregnant women at O'Smarch village where is one of the malarious areas in Cambodia.

Figure 2: Most common diseases by percentage of all cases in O'pork health post, June 2000-Jan 2001



This figure presented the percentage of the most common diseases in O' Pok health post from June 2000 until January 2001. From overall diseases, malaria is still in the high rank of mobility causes. The sharply drop out number of malaria in August, one possible reason could be relevant is flooding. During that period it was heavy rain due to Monsoon, the area was overwhelm with water and may clean up the mosquitoes

larva or destroy the breeding site of the malaria vectors. Later it was a dry season, which is not preferable for malaria spreading, therefore the number was decreased.

Table 3.1: Comparison number of malaria cases in pregnant women with total cases of malaria in O'Pok health post between June 2000–January 2001

Malaria	June	July	Aug	Sep	Oct	Nov	Dec	Jan
Total cases	450	337	88	41	39	39	19	36
Pregnant women	30 (6.7%)	21 (6.2%)	9 (10.2%)	2 (4.9%)	3 (7.7%)	2 (5.1%)	0 (O%)	4 (11.1%)

Source: Malteser, health report 2000

For overall, The average percentage of malaria in pregnant women is about 6% out of the total cases. Tendency of malaria in pregnancy followed the overall picture of malaria. The high peak of malaria in pregnancy was in June and declining dramatically, and reach zero point on December. However in January the incidence is increasing again and it was a highest proportion of malaria in pregnancy compared with total cases.

The reasons to explain this phenomenon probably due to the seasonal involvement, in Cambodia from May to October usually is a rainy season, which is normally a peak for malaria. In 2000 during rainy season, there was heavy rain and flood in this area, so the stream may clean up mosquito's larvae and destroy their breeding site, therefore the number of malaria case was decreasing from June to October. Later dry season starts in November which is not a peak for malaria, thus

number of cases presented from November to January was still low in both total cases and pregnant women.

3.2 Rationale

Malaria control activities remain a problem in Cambodia. Although the CNM has launch its strategies and promoted of ITNs covered 80 % of target population by year 2000 (MoH, 2000). However, there are still some places uncovering of the national plan according to limited resources. O' Smarch village is one of the left over villages, although it has been prioritized by the local government (MoH, 2000).

As the rapid assessment conducted by the author in O' Smarch village on February 2001, the problem of malaria has still remained in the top five leading causes of illness. It also affects in pregnant women. There is neither control malaria strategies nor government health service existing in this village. Some pregnant women did utilize the ANC service from the health post in the village near by named O' Pork while some still lack of ANC. Finally, however most of them did delivery at home under the attendant of TBAs.

In case of sick, self-treatment is the first of choices for them. Unfortunately only few of drug sellers are trained, so probably incomplete treatment were prescribed. This can lead to " new drug resistant" in the community which also can be spread through

the whole nation, region and global later, if there is no appropriate control strategies intervene immediately.

In addition, pregnant women have less awareness and low knowledge, attitude and practice about malaria. Low economic status may lead them to low practice on prevention and treatment seeking behavior. However, to solve the problem of low economic status, more stakeholders are needed, including the policy makers, therefore it will not be addressed in this study.

According to these finding, one possible intervention strategy can be recommend here is to tackle or intervene on knowledge, attitude, and behavior of pregnant women for the result of changing behavior towards malaria prevention and seeking health behaviors. IEC through TBAs, would be a feasibility channel to approach the pregnant women on health aspect. Also in terms of sustainability using community mobilization will be a great advantage.

As people are responsible for their own development. Change is not something to be imposed by external change agents from the outside, but the prerogative of those who live in the community and share the risks involved in the decision-making process. Although people make some decisions in isolation and take action as individuals, effective change is most likely to occur if it community base (D. Pietro, 1983).

3.2.1 Health Education & Health Promotion

Health Education is the process of educating people about health an it can be defined as "**Process of continuum of learning which enable people as individual and members of social structures, to voluntarily make decisions in ways which are health enhancing**" (Joint committee on health education terminology report 1991, p.103). It is recognized as an important tool to change the knowledge, attitude behavior and the risk factors associated with disease or health problems.

Health Promotion is a broader term than Health Education. Green and Kreuter (1991) defined Health Promotion as "**the combination of education and environment supports for actions and conditions of living conductive to health**". In this definition, education refers to health education, and environment refers to social, political, organization, policy, economic, and regulatory circumstances bearing on health. World Health Organization (1995) defined Health Promotion as the process of enabling people to increase control over and to improve their health. Mainly it looks at following three areas:

a). It is concerned with promoting health by seeking to influence life style, health service, and environment. It is expected that, TBAs can play a role as changing agent to change the life style, belief and misconception by providing scientific health related information which help to increase awareness of pregnant women about malaria , create prevention behaviors and demand to utilize health care services effectively.

b). Health Promotion is not only concerned with physical environment but also the culture, socioeconomic circumstance that substantially determine the health status. TBAs being a member of the same community can play a vital role in promoting the health of community by involving and sharing ideas with the pregnant women for the betterment of their own health.

c). The empowerment of communities and individual. Through the process of becoming actively involved in fostering their own and the health of their communities, the people should acquire an increasing sense of control over their lives.

According to these all definitions, health education is an important component of health promotion and firmly implanted in it or in other words, health education is one of several different intervention activities that can be used to promote health.

However, health behavior change is very complex, we cannot expect people to adopt lifelong health- enhancing behavior if we force them into such change. Nor can we expect people to change their behavior just because they have been exposed to a health education program. Voluntary adopt health enhancing behavior is needed for successfully program , to achieve this behavior there is a need for individuals and community participation in such health education/health promotion program as well as a well plan, implement and evaluate appropriate program.

3.2.2 Traditional Birth Attendants as Health Educators

Traditional Birth Attendant (TBA) as a Health Educator may be an appropriate intervention strategy to solve the problem of malaria in pregnancy in rural Cambodia. According to traditional belief and limited of health facilities, pregnant women usually go to consult/delivery with TBAs more often than go to see health personnel. More over as TBAs reside in the same community, thus they are familiar with pregnant women and their backgrounds and environments, which is included the actual economic status, culture and individual difficulties of pregnant women in the community.

The result of national survey in 1998 found that the majority (54.5%) of live births in the last five-year, the mother did not receive any antenatal care at all. Especially in the remote and isolated area, less than 40% of births were preceded by any antenatal care. In addition, 90% of births occurred at home or in other non-medical facilities. In all other parts of country (not in the capital city) 73% of births is attended by TBAs (national survey, MoH, 1998).

TBAs can play a role as a change agent in the community, Change in knowledge , attitude and practice is not possible without effective communication. For effective communication, there should not be any barrier between communicator and receiver. Being the member of the same community and especially health care provider for pregnant in the community, thus TBAs may not have communication barrier with the target population.

TBAs can create awareness of malaria in pregnant women by providing health information, education, communication and motivating pregnant women to change their behavior on malaria prevention, with collaboration of health personnel from the existing health post near by the village and the community members such as the chief of the village, pregnant women as well as women who used to get malaria during pregnancy. Of pregnant women who had experienced with malaria, they can convey the facts of their own experience/condition and demonstrate to the other which probably effective to contribute on changing knowledge, attitude and behavior of pregnant women on malaria.

At present, community involvement for tackle health problems is important and must be addressed in any health intervention strategies. By community involvement or in other word, **community participation** is a basic and important for successful of the program in all communities. Even though the degree of community participation varies from situations, community to community and neighborhood to neighborhood, but preventing such community health problems not likely to be effective without active involvement of individuals, families and community.

3.2.3 How Does It Work

One of the major problems of malaria in pregnant women in O' Smarch village is their low KAP on malaria. How can these pregnant women be motivated to change knowledge, attitude and practices, that is a challenge. A theory, Health Belief Model could be adopted to explain people changing behavior on health aspect. In fact, Health Belief Model (HBM) was developed to explain why people would or would not use

health care services (Rosenstock, 1996) but the Health Belief Model also has been using to explain variety of health behaviors (Janz & Becker, 1984).

There are four major types of beliefs that influence the likelihood of taking action that is relevant to a given disease or condition:

1). Perceived susceptibility/severity of malaria. It refers to the subjective that the pregnant women could get the disease and perceived seriousness of malaria may or may not relevant with the actual severity of the disease. But it is addressed in the model that perceived severity is much more influential on behavior than the actual severity of the disease.

Individual perception of the severity of malaria refers to feeling concerning the seriousness of contracting malaria as well as an evaluation of the consequence from the disease. When individuals feel that they are at risk of getting malaria, they may or may not take any action to protect themselves depending on whether they know that malaria is severe or can cause death. Then they will be more likely to protect themselves from the getting malaria. However, there is not only these two factors affect on their prevention behaviors, other factors such as socio-cultural, economic status and individuals' backgrounds and environments are also affected to their behaviors.

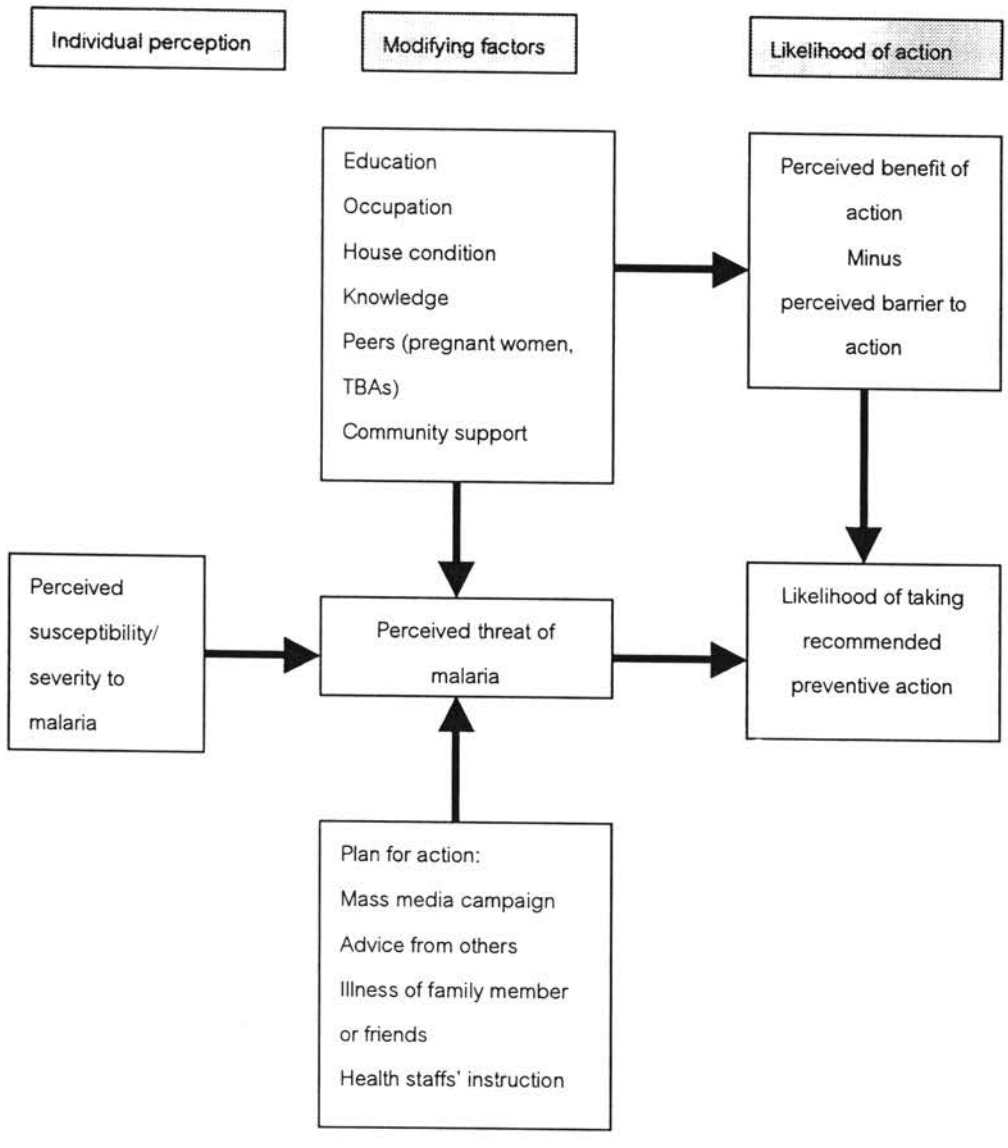
2). Perceived Threat of malaria: is the consequence of personal perception of susceptibility and severity of malaria. If the pregnant women realize the susceptibility and severity of malaria, they will perceive a threat of malaria and start to take action on preventing of getting malaria.

3). Perceived Benefits of the behavior generally refers to how effective the barrier is in producing a health benefit. The acceptance of susceptibility to malaria and act to prevent of getting malaria is related to behavior and depends on negative or positive effect of the consequence after the action. Thus the people's perception of malaria on both preventive and curative aspects and modifying factors should be identified; to design and find out a strategy to increase people's knowledge, attitude, and practice for prevention on malaria through appropriate IEC strategies.

4). Perceived Barriers to the behavior also influence with various conditions or situations such as, feasible, available, affordable, and accessible. The main barriers of malaria preventive and treatment-seeking behavior in pregnant women could be low knowledge, attitude on malaria, cost of adopted preventive behavior as well as cost and accessibility of health care service.

Perceived barriers can be broken down when perceived benefit is higher than perceived barriers. With continue efforts of TBAs under the support of community members, pregnant women will perceive benefit to likely hood of action.

Figure 3: The Health Belief Model as a Predictor of Preventive Health Behavior



Source: adapted from HBM by Becker, Drachman, and Kirscht (1974)

Another model that can be applied in developing intervention to change health human behaviors is the PRECEDE-PROCEDE Model. This model can assist health educators and planners in conducting a study and evaiuation of all factors that influence change in human behaviors (Kaplan et all, 1999).

The adapted Nine Phase of PRECEDE-PROCEDE model for malaria control in pregnant women in O' Smarch village composted of:

Phase I: Social diagnosis

The pregnant women are suffered and facing economic loss from malaria.Including the high risk of drug resistant due to self-treatment.

Phase II: Epidemiological diagnosis

This data will contribute to the needs in phase I: there is a high incidence of malaria in pregnant women and those who got first treatment still have malaria positive after 4 weeks of treatment.

Phase III: Behavioral and environmental diagnosis

This phase involves determining and prioritizing the behavioral and environmental factors that might be linked to the health problems in Phase II. Low prevention and Self-treatment are two mains behavior that involves in malaria in pregnant women and the geographic, climate, seasonal and temperature are also contribute to spreading of malaria.

Phase IV: Educational and organizational diagnosis

These are all the factors that have potential to influence a given behavior. Three categories are classified:

1) ***Predisposing factors***: these factors are knowledge, attitude and beliefs can facilitate or hinder pregnant women's motivation to change and can be

altered through communication. However, the level of education and their economic status can also influence their behavior. But these two factors are difficult to control therefore they will not be addressed in this study.

2) ***Enabling factors***: these are factors attributed to the action of any individual or organization including availability, accessibility and affordable of health services as barriers or promote the behavior change.

3) ***Reinforcing factors***: these comprise the different types of feedback and rewards that pregnant women received for encouragement in changing their behavior. They are communication among pregnant women together, TBAs/Midwives and community support.

Phase V. Administrative and policy diagnosis

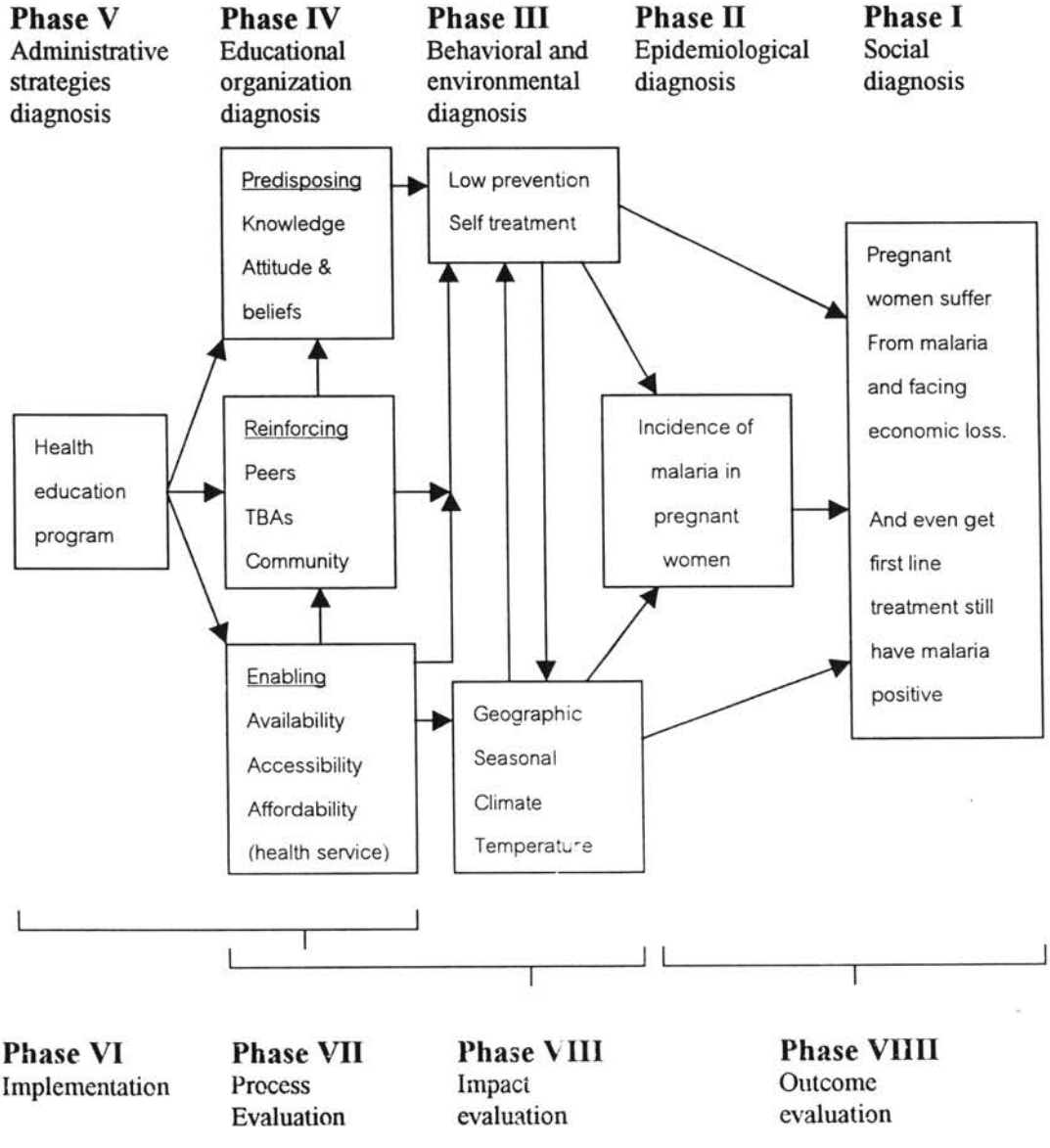
This phase determines the capacities and resources available to develop and implement the program. In applying for this situation, one malaria strategy can be suggested: mobilizing community by training TBAs as community health educators for improve knowledge, promote preventive behavior and safe treatment seeking treatment behavior in pregnant women.

The four final phases, phase six to nine

These phases concerned about implementation, the process of evaluation, impact and the outcome. The main purpose of this study's implementation is to increase KAP and changing pregnant women's behavior towards malaria prevention and

treatment seeking behavior. All of these for processes need continuos monitoring if there are any problem and obstacle occurs during on going process then the assessment and modification of the plan should be taken place in order to achieve the ultimate goal of the program.

Figure 4: The PRECEDE-PROCEED model for developing malaria control strategy in pregnant women: training TBAs as health educators Adapted from Green and Kreuter (1991)



The purpose of this proposed program is to change in knowledge, attitude, and behavior of pregnant women on malaria aspect. This study is integrated with health promotion and health behavior because TBAs are key persons who work as a changing agent. They are persons who supports, encourage, placing the problem with pregnant women, the local leaders, health staffs as a public agenda in order to raise awareness of pregnant women about malaria. Principally all these activities are under the health promotion program.

The health education program will use strategy with 3 components: *1) training educators and material production to improve educational services, 2) mobilizing community support through involvement of community members: by focusing with TBAs under the support of Chief of the village, 3) health education to improve knowledge, attitude and practice of pregnant women.* Finally this health education program will enhance and giving experience in community organization, participation and mobilizing community's net working.

3.3 Objectives

Goal

To reduce morbidity and mortality of malaria cases in pregnant women in O'Smarch village, Samrong district, Oddar Meanchey province.

General Objective:

To test the effectiveness/feasibility of the malaria control strategy in pregnant women: training TBAs as community health educators.

Specific Objectives:

- To mobilize TBAs under support of the chief of village and pregnant women through health education training.
- To develop and implement training program including supervision and monitoring system for community health educators.
- Increasing 30% correct KAP towards malaria among pregnant women.

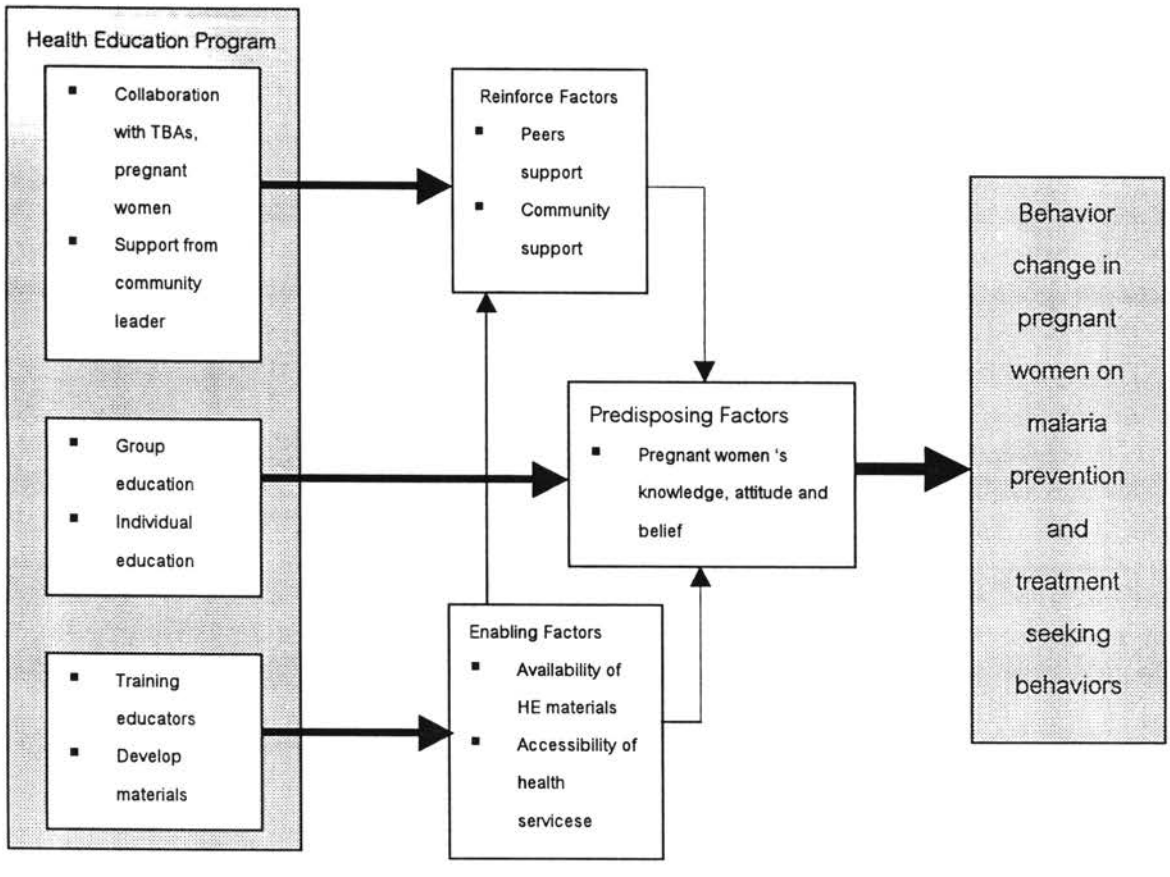
3.4 Methodology

3.4.1 Study Approach

This study: training TBAs as community health educators: a strategy for malaria control in pregnant women will apply both quantitative and qualitative approach.

3.4.2 Conceptual Frame Work

Figure 5: A conceptual framework of changing behavior towards malaria in pregnant women Adapted on Green and Kreuter (1991)



3.4.3 Study Location

The study will take place in Samrong district, Oddear Meanchey province that is one of malaria endemic area in Cambodia.

3.4.4 Program Description

Concept

In this proposed program: training TBAs as Community health educators for malaria control in pregnant women, focus on training TBAs who are mainly giving

services to pregnant women in the community. TBAs are selected by their clients to utilize services thus they are well respected by those clients. Furthermore they live in the same community with those pregnant women therefore their relationship, perception and understanding about the social and environment of individuals and community is probably better than health staffs. So they can play as key role of a change agent in the community and as a link between the community and health staffs.

A strategy of training TBAs to be community health educators for pregnant women does not cost huge money and it increases community participation, sharing the responsibility among community and health staffs. It is a process of community empowerment, which will help to increase decision making power and self-support of community for their better health and well being.

Achieving this goal requires capacity strengthening and community participation. To support these purposes a good planning is necessary. It needs to be clear understandable, sequential and feasible. Therefor planning are divided in to 4 phases: 1) Building up health education program committee (organization), 2) IEC development and training educators, 3) Conducting health education, and 4) monitoring and evaluation.

1) Building up Health Education Program Committee (HEPC):

community mobilization will be used as a strategy for the reason easy accessibility and sustainability of the program as well as the community support could be one of reinforcing factors for the target groups in terms of changing behaviors.

HEPC can give mutual support to TBAs to work as a Health Educator in the community and can create and give social pressure among target population.

The group will be formed under the support of the ***chief of the village and community such as pregnant women, TBAs and also the health personal from O' Pok health post.*** The purpose and the group's function will be addressed including rewards or incentive for the selected committees. In addition the budget and resources allocation will be informed to the Health Education Program Committee (HEPC) as well.

The Health Education Program Committee will compost of:

1. Chief of the village
2. Pregnant women
3. TBAs
4. Health Staffs from O' Pok Clinic
5. Local health authority

The Health Education Program Committee will be responsible for:

1. To organized a meeting and discuss about malaria in pregnant women in the community.
2. To establish mutual support for TBAs who is selected to be community health educator.
3. To work as a link between community and local authority.
4. To create social pressure, to solve the problem of malaria in pregnancy

Health Education Program Committee will select the community health educators from TBAs in the community as mentioned reasons before. The following will be basic qualifications for health educators:

1. TBAs who live in this village permanently.
2. Having good reputation /or acceptable from the community.
3. Keenly motivated and interested to work as a volunteer in the community.
4. Those who have free time or voluntary to work.

Expected role of Community Health Educators (CHEs)

The expected role of CHEs will be as follow;

1. To provide health education among pregnant women and distribute IEC materials.
2. To work as a bridge between the community and health staffs.
3. To act as change agent for behavior change on malaria prevention and treatment seeking behaviors among pregnant women.

Incentive for Health Education Program Committee (HEPC) and Community Health Educators (CHEs)

HEPC and CHEs serve as the pure volunteers who are committed to help the community for better of the health of the community with their own initiation. One of the greatest incentives will be self satisfaction of their own work and value offered by the community. There will be no direct cash incentive for both HEPC and CHEs, even though the following items can be considered as an incentive for the CHEs as well as for the whole community.

1. 5 days training on IEC and motivation, which will develop some skills and knowledge of individuals.
2. During training they will get payment in kind as a food and soft drink.
3. At the end of training, they will get certificate.
4. CHEs will have god linkage with local authority, health staffs as well as in the whole community because of taking new responsibility as health educators which also can be considered as a incentives.

For incentives of HEPC: with the efforts of HEC, a process of empowerment: identification of problem, setting objective, looking at the resource, evaluating the achievements can be considered as incentives. Lastly whatever change will be occurred in the health of the pregnant women and community that will be the biggest incentive for the HEPC.

2) Information, Education and Communication (IEC) Development and Training Health Educators:

2.1 Information, Education and Communication (IEC) development: according to most of the target population has low- literacy, thus the guidelines for preparing health education materials for low-literacy from Meyer and Rainey (1991) will be applied (James F. M & Jan L. S., 1993, p.146).

Table 3.2: Guideline for Preparing Written Materials

Guideline	Explanation
1. Needs and target population identification	Identify the topic and target population, e.g., middle age women and mammography
2. Plan the project	Develop a work plan and budget for your materials
3. Audience research	Segment your target population using such factors as experience, attitude, culture, etc.
4. Material development	
a. Style	Use an active voice with familiar terms that highlight key points. If possible, develop a behaviorally oriented interactive message.
b. Organization	Sequence or prioritize the message.
c. Content	Write using words and terms that are understandable to lay people. Use short sentences and paragraphs.
d. Format	Make it appealing to the eye, making sure the reader can identify the main points.
5. Graphics and illustrations	Graphics and illustrations should be positive and easy to understand, and should summarize the message.
6. Pre testing	Make sure that materials work before you use them with the target population. Also, make sure the reading level is okay.
7. Printing	Consider paper color, size, and cost
8. Distribution and training	Develop a distribution system and instructions for use.

Source: Adapted from " Writing Health Education Material for Low-Literacy Populations" by J. Meyer and J. Rainey, 1994, Journal of Health Education, 25 (6), pp. 372-374.

2.2 Training community health educators: the selected TBAs from the HEPC and the health staffs from O'Pok will attend the training class before giving health education to the target population. The active learning will be one of strategies used in the training class in order to share the experience and create the creative thinking for developing the most suitable strategies on health education, which can easily integrate to the perception of indigenous people.

To change knowledge, attitude and behavior of pregnant women towards malaria, TBAs who live in the same community will be involved in the program. Before taking responsibility as a CHE, they need to have basic knowledge and skills on communication, motivation and malaria in pregnant women so that they can communicate and convey the message to pregnant women. In one hand training will enhance the knowledge and skills of CHEs. On the other hand training will empower them to work as a motivator. So they will get recognition when they participate in training program. Therefore this training will not only increase skill and knowledge of CHEs but also recognition and empowerment.

This training is design for 5 days. The expected participants of training are age between 35 to 60 years old and low literate. Therefore the training will be organize with active participation by sharing their experience rather than lecture.

3) Health Education Implementation:

As few people change their behavior based on single exposure; instead, multiple exposure are generally needed to change most behaviors (Erfurt, Foote, Henrich, & Greg, 1990; Shea & Basch, 1990). Therefore, all pregnant women who enroll in ANC program will get health education at health center then their name and address will be passed through TBA (Health Educator) in their section. This TBA will take responsible for giving health education at homes later to booster their knowledge and at the same time she will observe the changing behavior of clients through home visit (at least once a month).

In case of pregnant women have arise abnormal signs such as fever, chill, too weak, TBAs will encourage them to come to the health post in stead of self administer. In case pregnant women loosing follow up, she will be a contact person between the health post and community for home visits later.

For health education patterns, both face to face and group health education will be applied as each method has it own advantage depends upon the health educators and situations. Pregnant woman who had experience with malaria during pregnancy will be used as a case study and invited to share experience during health education sessions, as real experience can enhance the people perception's and increase awareness of disease.

At the end of the month, all health educators will submit their reports on health education and home visit as well as problem facing to the HEPC. The meeting will be arranged once a month for up-date the situations and solving the previous' month problems among HEPC.

4) Monitoring, Supervision and Evaluation

Monitoring will take place since the beginning of the program start and it will be a continuous process. By the end of a month the report from both community and health post will meet together with HEPC and the supervisor of the program. The meeting will be arranged regularly to discuss all progress and problems and will use group as a center for problem solving. While evaluation will use the KAP survey as a strategy to see changing of KAP towards malaria in pregnant women before and after intervention take place.

Supervision is also one of the important parts to achieve the objective of the program. Basically, there are five stakeholders in the program: HEPC, CHEs, pregnant women Health Post and local health authority. To support, encourage and provide technical skills and regularly motivation, one supervisor from O' Pok health post will be assigned to take responsibility.

The purposed program will be evaluated in two stages by apply both qualitative and quantitative approach for effectiveness and feasibility of the program.

Stage I. Short term evaluation: Evaluation of TBAs training as health educators

According to the expected participants of training is age between 35 to 60 years old and low literates. Thus evaluation of training will be done before and after training session ending by informal questions, discussion, observation, and demonstrating practical exercise.

Stage II. Long term evaluation: evaluation of the impact of the program

I. In terms of effectiveness

A. Pre test KAP survey

The 1st KAP survey will be conducted before implementation of the interventions with a structured interview questionnaire. Two health staffs from O'Pok health center will be trained for interview and collect data. The survey will take place for 5 days and the participants will be informed through the chief of the village before 1 weeks in order to reach them all during a period of interview.

B. Post test KAP survey

This step will be conducted the same process as pre test KAP survey but will perform after the intervention take place for about 7 months. Later estimated program effectiveness will be based on the change between pre and post intervention on KAP of pregnant women.

C. Sampling

All pregnant women in O'Smarch villages who voluntary participate will be included as samples of this study

D. Sample Size

According to the number of pregnant women is not consistent, then the estimated number can be calculate roughly base on rapid survey on pregnant women through chief of the village at that period of time. However, sample size will depend all pregnant women whom voluntary to participate in this study.

E. Data Collection

A set of interview questionnaire will be developed (see: annex questionnaire) as an instrument to collect data. This questionnaire includes three main parts: knowledge, attitude and practice on towards malaria and treatment seeking behavior. The two Malteser health staffs (Cambodian) will be trained to interview participants with the questionnaire before collecting data in order to reduce bias and error. Also the pre test of the questionnaire will be conducted before applying in the real situation for validate and reliable of the questionnaire. Later, data will be checked for completion, cleaning and re-coding by the supervisor of this program.

F. Data Analysis

For quantitative part, the data obtained will be analyzed by SPSS computer software program by using descriptive frequency. At the end the mean value of intervention and control group will be compared to measure effectiveness of the program result.

Program effectiveness = (A2-A1)

Where: A1 and A2 = pre and posttest outcome measures

II. In terms of feasibility

The feasibility of the program is also important for the program impact. This will be measured by:

1) Monitor the monthly report of O'Opok health post in term of number of health education given at health post, number of malaria cases in pregnant women.

2) Monthly report of TBAs activities under support from the chief of the village.
3) Interview with open-ended questionnaire with the TBAs who are CHEs.

3.5 Human Resource and Technical Requirement

This proposed program is designed as a partnership between the community and the O'Pok health post. According to this village is new resettle area, the structure of community organization is not that strong, therefore full technical support from the health staffs and supervisors is needed at the early stage. Community may need to understand their role, responsibility, and their strength, which means they may need more encouragement, managerial support, frequent reinforcement from O'Pok health staffs as a partner.

To carry out the program successfully, 1 supervisor (the author) and 1 health staffs will be assigned to work as co-partner through the first year of the program. One trainer will be hired for training session for community health educators.

3.6 Risk & Assumptions

Firstly this study due with human behavior, to measure behavioral change after finish intervention, the result of KAP survey is not warrantee. People may say that they

have changed their behaviors during answer the interview, but in fact they still stuck on their old behavior in whatever reasons. Therefore the extended regularly observation by those who stay in the same community and close with the target population (pregnant women) is essential. In this case if training TBAs as community health educators is successfully in both effectiveness and feasibility, then further regularly observation of pregnant women will be another task of them to support on evaluation of behavior change.

Secondly, as Cambodia located close to Thai gulf, each year there is Monsoon from China effect to the area. Like last year there was flood in the area of proposed study due to heavy rain in September. This even gave both positive and negative impacts to the area. One positive side effect was the heavy rain and flood had clean up the larva of mosquitoes and destroy their breeding site which, probably one of reason to explain malaria cases drop out during last rainy season. For the negative impact, it cut the transportation rout, which was one of the barriers to access the health service.

Therefore if it will be heavy rain again, it will obstruct or delay the program activities, which may effect to the negative result or in another way it may contribute to a good result by reducing number of malaria cases in the target population. However, all indicators for program evaluation will confirm the effectiveness and feasibility of the implement intervention.

The third, the O' Pok health center is not located in O' Smarch village. It is a hiliy area between them and there is no regular public transportation provides.

Therefore all the clients, especially pregnant women who want to come to the health post have to rent the motorbike which cost about 50 bath (round trips) if they have no their own vehicles. This factor may lead to constraint pregnant women coming to utilize the health service here. Therefore another incentive strategy may need if the ANC/screening rate is provable low.

3.7 Activity Plan

Activities	**Year/Month (number denotes the month June-6, May-5)**											
	2001							2002				
	6	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**
Formation HEC ▪ Meeting with O'Pok health staffs & community members ▪ Selection of CHEs												
Develop IEC materials												
Training CHEs												
1st KAP survey & data analysis												
Implementation												
Monitoring, supervision & evaluation												
2nd KAP survey & data analysis												
Final evaluation and writing report												

3.8 Budget Plan

Item	Description	Breakdown ($ US)	Cost
Project administration	12 months	20$ per month	480 $
Organize net work (meeting)	4 times	20$ per meeting	80 $
Developing materials ▪ Materials documents ▪ Poster	 500 leaflets 10 Posters	 0.1 $ malaria division	 50 $ none
Training course ▪ Participants ▪ Facilitators ▪ Documents & certificates	 6 persons, 5 days 1 persons, 7 days 6 sets	 2 $ /day/person 25 $/day/person 10 $/set	 90 $ 350 $ 60 $
KAP survey 1 st ▪ Personnel ▪ Printing documents ▪ Data processing	 2 persons, 5 days 200 questionnaires 2 persons, 2 days	 5 $/person/day .1 $/ questionnaire 10 $/person/day	 50 $ 20 $ 40$
Implementation health education		None	None
Monitoring & supervision ▪ Field visit ▪ Exit interview ▪ Monthly meeting	 14 times (2 times/ month), 1 person 14 times (2 times/ month), 1 person 7 times, 15 persons (1 time/month)	 None 5 $/person/time soft drink & snack: 1 $/person/time	 None 70 $ 105 $
KAP survey 2 st ▪ Personnel ▪ Printing documents ▪ Data processing	 3 persons, 5 days 200 questionnaires 2 persons, 2 days	 5 $/person/day .1 $/ questionnaire 10 $/person/day	 75 $ 20 $ 40$
Supervisor	1 person, 5 days/month, 12 months	300 $/5days/person	3600 $
Miscellaneous			300 $
		Grand total	**5360 $**

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