

## **CHAPTER III**

### **Proposal**

#### **Developing a community profile on socio-economic and human behavioral aspects for improved malaria control in Panchkhal village, Nepal.**

##### **3.1. Introduction :**

##### **3.1.1. Rationale :**

The incidence of malaria in Panchkhal village is high in comparison to national situation of Nepal (Dept. of Health Services, 1996). The five years epidemiological information of the country and village shows the status of malaria as given in table 3.1. According the table the annual parasite incidence (API- a widely accepted and used sophisticated measures of malaria incidence in a community) (Park and Park, 1991), in the village were 104.3, 121.7, 115.9, 53.3 and 60.3 per thousand population in the years 1991-1995 respectively. The national goal in malaria control for the area in 1995 was to reduce or contain API at the level of 4 per

thousand population, which obviously has not been achieved (Dept. of Health Services, 1996).

**Table 3.1** : The 5 years status of malaria in the country and Panchkhal village, Nepal.

Year	ABER		API		SPR	
	Country	Village	Country	Village	Country	Village
1991	6.95	39.24	2.63	104.3	3.73	26.45
1992	6.35	38.17	2.07	121.7	3.20	31.89
1993	4.79	30.53	1.42	115.9	2.76	27.05
1994	3.55	17.63	0.83	53.3	2.19	25.46
1995	2.49	15.56	0.78	60.3	2.85	31.00

( Source: Modified from Dept. of Health Services, 1996)

*Note :*

*ABER - Annual Blood Examination rate*

*API - Annual Parasite Incidence*

*SPR - Slide Positivity Rate*

In the year 1995, the total positive cases in the village is high (1,482 cases) in comparison to any other place of Nepal and with a share 15.42 per cent of total national cases (total national 9609 cases in 1995) (Dept. of Health Services, 1996). Since the above figures show a continuous malaria transmission in the village and for that reason the village is selected as a study area.

### **3.1.2. Background of study area :**

Panchkhal village is a small valley in Kavre district of Nepal surrounded by hills. It is situated about forty kilometers east of Kathmandu, the capital city of Nepal and is about 15 kilometers away from district headquarters called Dhulikhel. An estimated population of this village is 24564 (Dept. of Health Services, 1996).

In Panchkhal village, there is a government health post to provide the health service with one health assistant, two auxiliary health workers, one auxiliary nurse midwifery, one village health worker, one administrative clerk and two peons.

The climate is hot and humid in the valley with an average temperature 35 degree Celsius in summer which is a favorable condition for mosquito breeding. The village is located at the height of about 1,100 meter. This is a forest fringe area having slow flowing water beds with marginal vegetation providing plenty of chances for mosquito breeding (from personal correspondence with director of malaria division).

### **3.1.3. Problem Statements :**

The government of Nepal has been undertaken two different approaches to control malaria (Dept. of Health Services, 1996). These are :

- (a) the management of malaria cases in the community, and
- (b) active intervention to control or interrupt malaria transmission with community participation.

The first is related with curative aspect and second with preventive. Curative aspect such as treatment of malaria cases with drugs alone can not interrupt malaria transmission. The way to reduce transmission in a community is to use preventive measures. The concept of preventive measures is to interrupt man-vector contact (WHO Tech. Rep. Ser. 839, 1993). The recommended measures to reduce man-vector contact are vector control and individual or family protection (Park, 1994). Vector control involves - (i) anti-mosquito measures such as residual insecticide spraying and space spraying (ii) anti-larval measures such as destruction of mosquito larvae by larvicides, source reduction of mosquito sites through drying or flushing (Gilles and Warrell, 1993). Individual or family protection includes mosquito repellents and coils, bed-nets, insecticide-treated bed-nets, protective clothing, screening of windows and doors, etc. (Gilles and Warrell, 1993).

The socio-economic and human behavioral factors can also influence the above mentioned preventive measures. For the adoption of those measures, community acceptability and practice of preventive measures are essential. Without active participation of community, malaria control would not be successful. Therefore, the socio-economic and human behavioral aspect of an area should be

identified by the administrators and planners of malaria program before taking a decision to devise any of above control measures.

In Panchkhal village, there is epidemiological and entomological profile on vector and disease which contains information like annual parasite incidence, annual blood examination rate, types of vectors and parasite are available (Dept. of Health Services, 1996). But there is no profile on host about their socio-economic aspect, such as, occupation, patterns of migration and labor force movements, irrigation and agricultural practices, general housing conditions etc. (Joint HMG/WHO/USAID Assessment Team, 1994). Similarly, elements of human behavior such as taking care for personal protection from mosquito nuisance, treatment seeking behavior if suffered from fever or malaria and behavior in terms of maintenance of physical environment and housing conditions from mosquito nuisance are unknown. Therefore, this study proposes to collect those basic and important information in order to develop a socio-economic and human behavioral information profile of malaria in Panchkhal village of Nepal. In this connection, the content of the profile, importance of each components and its usefulness is given below :

**Table 3.2 : Profile about Host (Human)**

<b>Characteristics</b>	<b>Why it is important</b>	<b>How it may be used</b>	<b>Information from Panchkhal</b>
Population size	Indicates the total number of people at risk	To plan amount of drugs needed and to plan health facilities	

<b>Characteristics</b>	<b>Why it is important</b>	<b>How it may be used</b>	<b>Information from Panchkhal</b>
Distribution	Indicates accessibility of people, urban and rural environment	To determine the types of surveillance and malaria control activities required	
Occupations	Indicates risk of acquiring malaria e.g. farming, fishing, hunting, wood cutting, wood gathering, cattle herders, salespersons etc.	To find out who needs to know more about malaria and control activities required	
Mobility	Increases possibility of epidemics with movement of cattle herders, travel from urban to rural areas, labor movement with development projects, dams, refugees etc.	To plan control activities to allocate resources where they are most needed	
Types of dwellings and location in relation to breeding sites	Open dwellings are difficult to spray. Different ones need different net designs. Proximity of breeding sites increases risk	Helps to determine appropriate vector control measures.	
Income levels	Ability to buy health care, protection measures, quality of dwellings	To design cost-effective but equitable systems of health care supply (e.g. treatment, nets)	
Night time behavior	If people are outdoors during the mosquito biting time, their risk of infection is higher	To protect children by suggesting when they should be indoors and using a net	
Treatment seeking behavior	Influences access to early and effective diagnosis and treatment	To identify barriers to obtaining early diagnosis and treatment. To determine information needs of the community and of health care providers	
Environmental maintenance	Poor maintenance of canals and water pumps or poor drainage can create breeding sites for <i>Anopheles</i>	To determine information needs of the community, water authorities and municipalities	

<b>Characteristics</b>	<b>Why it is important</b>	<b>How it may be used</b>	<b>Information from Panchkhal</b>
Personal protection activities	reduces mosquito-human contact (number of bites) so reduces transmission	To determine materials and information required	
Community protection activities	Indicates community's concern about malaria	To support community efforts to arrange accessible health care, finance nets and insecticide, reduce breeding sites	

(Source : Adapted from WHO, 1997. Partnerships for change and communication guidelines for malaria control).

#### **3.1.4. Relevance of the problem :**

The facts and figures about malaria in Panchkhal village are indicating persistent transmission. Because, annual parasite incidence (API), which shows the status of malaria in the population, has increased from 53.3 per thousand in 1994 to 60.3 per thousand in 1995 and cases have also increased. Though, there was a reduction in the API and cases in 1994 in comparison to the year 1993 (API 115.9/1000). The government annual report (1996) states the reason of reduction that there was a decrease in number of slides collection by 25.6 per cent in the year 1994 and actual API may be higher than this, because, low slide collection means inability to detect more cases and decrease in API (Park and Park, 1991).

The persistent transmission problem is serious in the village for the reason that the government's present malaria control strategies is unable to interrupt the

transmission and reduce the cases. If the present trend of transmission continues, the morbidity and mortality will further rise and it will hinder the socio-economic development of the village. This will further contribute chances of malaria transmission to other villages nearby.

Government's present control strategies such as malaria surveillance, vector control, community participation and training have certain extent of deficiencies. Under malaria surveillance, current active case detection and passive case detection mechanisms do not cover a search for local socio-economic and human behavioral characteristics of malaria epidemiology as well as malariogenic potential of this aspect for malaria transmission. The mechanisms are limited up to the finding of fever cases and taking blood smears in the community (Joint HMG/WHO/USAID Assessment Team, 1994). This has caused a lack of information on behavioral and socio-economic information on transmission. So, there exists the need to conduct a study on behavioral and socio-economic aspect in order to lessen the gaps in present information for the selection of effective control measures.

### **3.1.5. Purpose Statement of the study :**

The purpose of this study will be to identify the socio-economic and human behavioral aspects conducive for malaria transmission in Panchkhal village in order to develop a malaria information profile. This will be done by the collection of



information on socio-economic conditions and elements of human behavior of community people conducive for malaria transmission.

The profile will define the local situation of malaria in the village revealing which component of the above aspect is most responsible for transmission of the disease. This will help concerned authorities in devising a suitable control measures according to local conditions in order to interrupt the transmission and thus reduce malaria infection.

The proposed study will be a cross-sectional survey for exploratory purposes with a qualitative approach. Because, it will focus in finding some clues for the explanation of a condition (Rogers and Rogers, 1976). The techniques for collection of required and relevant information will be interviews, field observation and review of available documents and service statistics.

### **3.1.6. Field of application of research results :**

To interrupt the transmission of malaria in the village immediately, it is essential to determine socio-economic and behavioral factors conducive for transmission and based upon which a control strategy according to the local situation can be developed. Central, regional and district level planners and administrators working for malaria under Department of Health Services, Nepal will use this

information. The information will provide them with a basis for devising suitable control measures to interrupt transmission there.

The information will help to know as what would be the people's acceptability and affordability towards insecticides and impregnated bed-nets? When to perform domestic and peri-domestic insecticide spray? Similarly, it will tell us when and how frequent supervision and monitoring activities should be actively carried out for the case detection, management, mass drug administration and chemoprophylaxis? It also assists to identify that when is the appropriate period to conduct health education? and ask community people to take part in protective measures such as use of bed-nets, protective clothing and screening of doors, windows and openings in houses.

## **3.2. Methodology :**

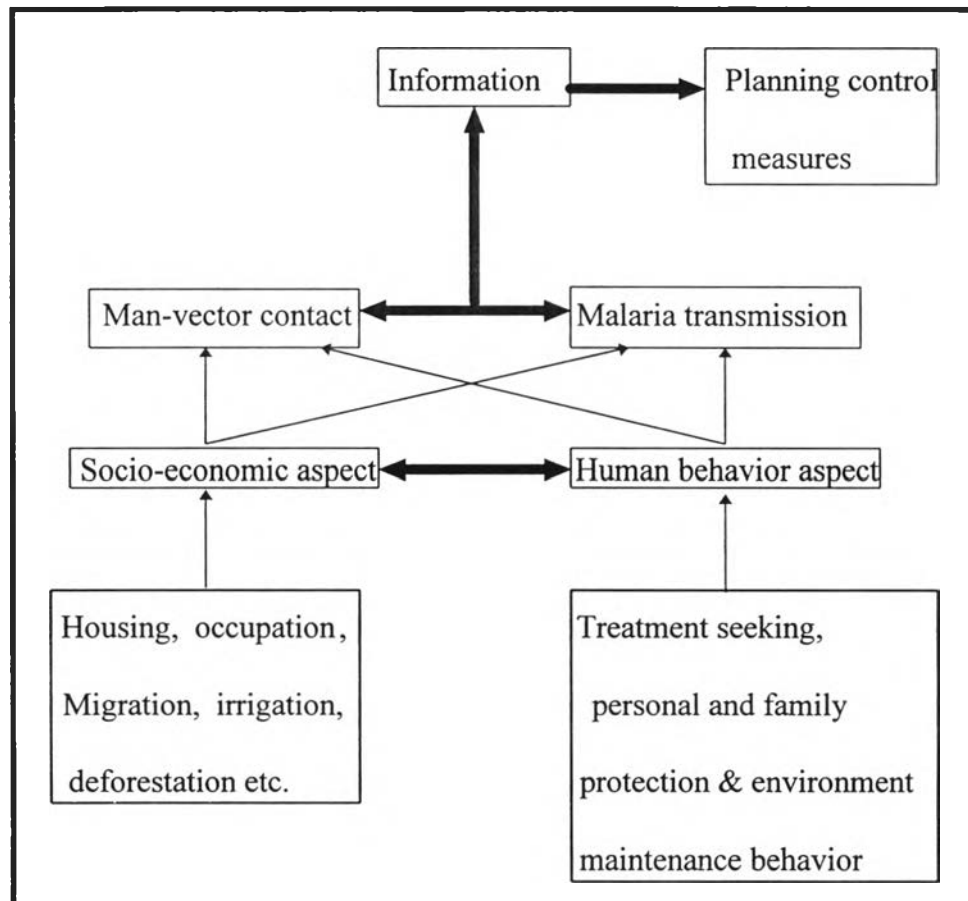
### **3.2.1. Conceptual framework :**

The conceptual framework (Figure 3.1) developed here describes that man-vector contact and malaria transmission and socio-economic and human behavior aspects are inter-related. The thick arrow lines show their strong inter-relationships. The extent of malaria transmission is dependent on the degree (frequency and chances of exposure) of human-vector contact and similar to that human-vector contact depends on distribution and intensity of malaria. Similarly, socio-economic aspects

determine human behavior and human behaviors show the socio-economic status of people.

Housing, occupation, migration, irrigation, deforestation are some elements which are considered as the conducive factors for malaria transmission. Elements of human behavior such as seeking treatment if suffered from fever or malaria, measurement undertaken for the personal and family protection from mosquito nuisance and behavior related to the maintenance of living environment from mosquito nuisance are also determinants of malaria transmission. People's socio-economic conditions and quality of behavior are attributing factors of malaria transmission in a malarious area.

**Figure 3.1 :** Relationships between socio-economic and behavioral factors with malaria transmission and need of information for planning control measures.



The arrow lines indicating upwards at the bottom of framework show components of each aspects. Other arrow lines showing upward and cross-sectioned indicate as these are attributing factors for respective boxes. The upward and horizontal thick arrow lines positioned at top of the framework indicate the requirement of information about the undergiven factors for planning appropriate control measures to interrupt the transmission. Thus the framework reveals the following objectives of the study.

### **3.2.2. Objectives of the study :**

#### **1. General objectives :**

To develop a socio-economic and human behavioral information profile of malaria in Panchkhal village so that a suitable control measures could be recommended in order to interrupt the transmission.

#### **2. Specific objectives :**

- to determine the socio-economic conditions of the Panchkhal village with respect to malaria transmission.
- to identify the elements of human behavior with particular reference to malaria transmission as given below :
  - (a) treatment seeking behavior if suffered from fever or malaria.
  - (b) personal and family protection behavior against mosquito nuisance
  - (c) behavior related with maintenance of surrounding environment to control mosquito nuisance.

### **3.2.3. Research questions :**

To conduct the study, the following research questions have been outlined :

- (1) What socio-economic conditions of the village such as occupation, housing conditions, agricultural practices, deforestation, irrigation and other

developmental works, labor force movement and migration pattern etc. are attributing for high malaria occurrence in the Panchkhal village ?

(2) What are the behavior of community people in terms of taking care for personal protection from mosquito nuisance, treatment seeking behavior if suffered from fever or malaria and maintenance of physical environment and housing conditions from mosquito nuisance ?

#### **3.2.4. Study design :**

The proposed study will be a cross-sectional survey used for exploratory purposes. Babbie (1995) writes that- *“the survey research is probably the best method available to the social scientist interested in collecting original data for describing a population too large to observe.”* Cross-sectional surveys are studies in which all data are collected at more or less the same point of time (Agyepong et al., 1995). There is no directionality either forward or backwards in time. Cross-sectional studies are usually used to describe the situation for non-intervention studies.

Exploratory studies are for the purpose of finding some clues for explanation of a condition which exists (Rogers and Rogers, 1976). The study will seek to determine the parameter of malaria problem (Fisher et al., 1991), because there is a

perceived malaria problem but the nature of the problem simply is not known. It will focus on the exploration of the elements of human behavior and socio-economic aspect of the Panchkhal village, that related with transmission of malaria. The study outcome will serve as a step in formulating relevant strategies and control measures for problem area to reduce the annual parasite incidence and morbidity.

The approach for this study will be qualitative, since the nature of the study resembles the process of producing new knowledge about the social world (Svetsreni and Attig, 1993). The study will focus on the behavior of human beings and socio-economic aspect. It will depend mainly on field work and will be conducted at micro levels by studying the individual, families and community which are not quantifiable, but rather observable quality in nature (Svetsreni and Attig, 1993).

### **3.2.5. Study population :**

The study population of this study will be all people and all the households of the village. The total population of village i.e., 24,564 and 4,310 households (As of estimate of 1995, Dept. of Health Services, 1996) will fall within the frame of this study.

### 3.2.6. Data collection :

Techniques for the information collection will be :

- (1) Interviews with key informants.
- (2) Direct observation.
- (3) Semi-structured interviews with household member
- (4) Documents and secondary data (retrospective and service statistics)

Multiple techniques mentioned above will be utilized in the study to obtain deeper understanding of the situation and identify the most required information. I believe that those techniques can gather as much as relevant and important information as required to fulfill the objectives of the study. Observations and key informant interviews will be done to determine the behavior of community people and their socio-economic status in general. But semi-structured interviews with household member will help to identify their actual behavioral patterns in terms of transmission, socio-economic conditions and their values. This will also examine their understanding about malaria about its causes and information required by them to manage the disease. Based upon information received from those techniques, a community profile could be prepared.



### **1. Interview with key informants :**

The objective of the study is to develop a malaria information profile on the malaria situation of a village by the collection of relevant and adequate data. The information will be about socio-economic and human behavioral aspect of malaria. Therefore, one of the research technique to identify those information could be interview with key informants. This technique will be incorporated because, this will help to learn about people's views on the topic of interest, their judgment and their perceptions and experiences which could be the important information for the profile.

Key informants will be those person who will allow and be able to provide more information about malaria and local situation. They will be identified by purposive sampling on the basis of their general /vocational/technical or special knowledge, position and preference (Annett and Rifkin, 1995) on the subject matter that he or she possesses because of their access to information in community or living in that community for a long time.

Key informants will be village head, ward incharges, formal and informal health service providers, formal and informal leaders of the village, local authorities of non governmental organization, teacher and local government staffs of other departments. The details about key informants and their selection are given in sampling (see page 84).

An interview guideline will be developed based on research questions containing open ended questions ( see Appendix - I). This will allow the researcher to obtain deeper and more detailed information on elements of human behavior and socio-economic aspect of the village in respect to malaria transmission and prevailing problem. It will assist a person's decision and choices regarding malaria control measures in light of his actual actions (Boonchalaksi, 1993).

As mentioned above, there will be two types of informants, one health service providers and other community people. Hence, two types of questionnaire guidelines have been prepared for these two groups. But the questions will be more less the same and it will be directed towards the community, not individually. A summary of topics on which questions will be asked is given below in Table 3.3 :

Table 3.3 :Topics of questionnaire guidelines to conduct the key informant interview :

Study area	Questions
<b>Human behavioral aspects</b>	<p><b><u>A. Major questions about :</u></b></p> <ol style="list-style-type: none"> <li>1. Treatment seeking behavior if suffered from fever or malaria.</li> <li>2. Personal and family protection behavior from mosquito nuisance.</li> <li>3. Maintenance of surrounding environment in order to reduce mosquito nuisance.</li> </ol> <p><b><u>B. Supplementary questions about :</u></b></p> <ol style="list-style-type: none"> <li>1. Knowledge and beliefs concerning disease, control and transmission.</li> <li>2. Risk behavior.</li> </ol>

Study area	Questions
<b>Socio-economic aspects</b>	<ol style="list-style-type: none"> <li>1. Housing</li> <li>2. Occupation</li> <li>3. Migration</li> <li>4. Irrigation</li> <li>5. Deforestation</li> <li>6. Health education</li> <li>7. Availability of health facilities</li> <li>8. Agricultural productions and development works</li> </ol>

Basically the questionnaire will cover two major types of questions as mentioned in the objectives of the study i.e., elements of human behavior and socio-economic factors that contribute to malaria transmission in the village. In this regard, first of all it will be essential to determine the people's knowledge and beliefs concerning disease and control measures, causes of malaria, breeding sites of mosquitoes, methods of prevention and know-how about treatment places. This will serve as the baseline information to proceed forward for interview.

Secondly, the questions will be about treatment seeking behavior of people. This will include health behavior like use of chemoprophylaxis and bed net will be explored. In addition, people's risk behavior such as working at night time in the forest or in other work place as their profession and sleeping outdoor will also be determined. The behavior of seeking treatment will also be identified by asking questions about patterns of seeking treatment like in malaria clinics, health centres,

district hospital or other places (private clinics, groceries, medical shop, traditional healers, self-medication etc.).

Furthermore, following the above questions, preventive behavior such as personal and family protection measures from mosquito nuisance will be identified. In this key informants will be asked whether people use bed net regularly or irregularly, whether people have outdoor sleeping habits without using mosquito-nets, whether people accept and allow insecticidal spray within houses and household area, whether people use repellents and coils against mosquito nuisance in order to protect themselves, and whether people intend to use and afford insecticide impregnated bed-nets.

Similarly, key informants will be asked about the people's behavior regarding the maintenance (cleanliness, reduction of breeding sites etc.) of their living environment in order to protect themselves from mosquito nuisance. In this regard they will be asked about any social mobilization to keep their surrounding neat and clean, people's participation in avoiding and properly maintaining the breeding sites of mosquitoes by spraying with insecticides, kerosene, or temporary drying of breeding sites. They will also be asked about people's activities in order to keep their housing conditions in right order such as use of nets on windows and doors to prevent the entrances of mosquito into house.

Regarding the socio economic aspects, key informants will be asked about major occupations, types of works, working time in the village, their average income and major ethnic groups as well as their behavior regarding malaria transmission. They will be asked about the average educational status of the villagers. Key informants will also be asked about the migration patterns in and outside the village. Similarly, information will be sought from them especially about the malaria risk group such as mobile population, migrants, miners, nomads, military people and workers of developmental projects.

Further, efforts will be made to identify information about deforestation in that area, settlements of landless peasants, refugees in the past or present in the village and status of malaria among those people. Key informants will be asked about average number of unemployed labor force in the village, labor force movements into the village from outside and about developmental works like irrigation, hydro-electric schemes, types of industry and average number of workers and their housing conditions as well as income (see Appendix I).

## **2. Field Observation :**

The study aims to identify and collect information on a local situation which is observable. Because several information for the profile could be collected by observing. Therefore, another technique for information collection will be

observation of the study area. Observation will be done by research team. Observation will help to understand human behavior and socio-economic factors that is largely unknown (hidden) or complex (TDR/SER/RP/94.2, 1994\*). It will also help to understand processes, events, norms, values and social context of an area (TDR/SER/RP/94.2, 1994\*). Observation will also help to complement the finding of other technique of information collection. Because what said in an interview could be confirmed by seeing during observation. Regarding this study the observation will collect the following information :

**A. Socio-economic aspects :**

1. Housing : Condition (outlook), demographic census of households, physical setting (internal), domestic pet etc.
2. Proximity of apparent or potential breeding sites of mosquito from houses.
3. Malaria records (printed on house walls).
4. Location and provision of the health service and malaria clinic : formal sector (government and non-government), informal sector etc.
5. Occupation and agricultural practices.
6. Deforestation activities

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\* *UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR); World Health Organization; 1994.*

**B. Human behavioral aspects :**

1. Personal and family protection behavior from mosquito nuisance.
2. Treatment seeking behavior if suffered from fever or malaria.
3. Maintenance of surrounding environment in order to protect from mosquito.
4. Risk behavior, illness behavior and risk groups (as a supplementary).

Observations will help to know man-made socio-economic setting of the village. The aim will be to study individual or group behaviors in the target sample, while at the same time capturing the identity and changeability of phenomenon related to research problem. Observation will remain in the form of systematic notation of events as they occur eventually (Boonchalaksi, 1993) and the checklist prepared for observation (Appendix 2) are guidelines.

Observation will also cover those problems which are not specifically discussed with or overlooked by key informants and may confirm or contradict the information provided by them (Annett and Rifkin, 1995). Observations will be conducted following the interview with house member. Important observations will be discussed with them again (Annett and Rifkin, 1995) in case of omission of any information or to confirm or deny information obtained during interview.

The different activities under observation may be described as follows :

1. House to house observation
2. Observation of village area
3. Observation of formal and informal sector health service facilities, and,
4. Occupations, agricultural practices and deforestation activities in the village

In the house to house survey, housing conditions will be observed. During that screening of windows and doors, provision of windows and walls on all sides, types of wall and roof type, clusters of households and family size will be noted. The internal physical setting of house will also be observed. During this number of rooms, number of sleeping rooms and availability of bed nets will also noted. Similarly, information about domestic pets will also collected. Proximity of apparent or potential breeding sites of mosquito from house will also observed and the insecticide spray records printed on house walls (if printed on wall of house) will also observed.

During the observation of village area surrounding environment of households like sanitation, waste disposal, water supply, water storage, water disposal around the village will be observed. During this, types of potential breeding sites, water lying around wells and taps, observation of mosquito larvae in water collections, proximity of village to the forests will also be noted because these are determinants of malaria conditions. The numbers of river, stream, ponds artificial lakes and forests



and its location and proximity to the households and village will also be noted. Conservation of environment (if, any) in and around the village in order to protect people themselves will also be observed.

The types and number of formal and informal sector health service facilities and provision of drug store will also be observed. The management aspect of service provider will also be noted by seeing availability of staffs, opening hours, availability of service types, availability of physical facilities related with control activities of malaria, and distance from households will also be noted.

The next step of observation will be to determine occupations, agricultural practices and deforestation activities in the villages. During this major occupation groups in that village, their working time and gender at work will be identified. Similarly crops cultivation area will be observed and proximity of agricultural fields from houses and provision of irrigation canal will be noted. Deforestation activities will be noted down by observing into the forests. Any activities related to forest like wood-cutting, working time of workers will also be noted down.

At the moment it will not be possible to enlist all activities that desired to be observed. Efforts will be made to incorporate every details related with behavioral and socio-economic aspect which are believed as helping or attributing factors for

malaria transmission or which create or enable a condition to get infection. For detailed observation a observation checklist will be prepared (see Appendix - II).

### **3. Semi-structured interviews :**

Semi-structured interviews with house members will be a technique to collect information and will be a tool to complement key informant interview and observation. This technique has been incorporated in the study after doing data exercise (see chapter IV). After data exercise it was realized that without direct talk with house member interpretation can not be made only by observation or interview. For example, if bed net or mosquito coils in a house are seen during observation then it will require to confirm by them at what time they use it or whether they use bed net during sleeping time. Thus semi-structured interview will help to determine specific responses and measurement on certain topics which could not be identified by open-ended questions in key informant interviews and helps to move from more general open-ended questions to more specific questions. Therefore, information will be collected through semi-structured interviews technique to examine people's knowledge on preventive and curative control measures; their knowledge on transmission; and, their behavior in respect to control and transmission.

In order to get good information from individuals semi-structured interviews will be done which is in the form of guided discussions. This technique has been

added in the study because semi-structured interview contains a core of structured and unstructured questions. This will help the interviewer to move in related directions for in-depth probing. The aims of semi-structured interview will be to explore more accurate information on (Rubinson and Neutens, 1987) what observed during observation.

An interview guideline will be developed and the interview will be conducted based on that guidelines. Respondents will be one house member from a house and will be the head of household. In case of unavailability of head of house, the senior member next to him/her will be respondent for interview. The questions will be about treatment seeking behavior, personal and family protection activities done to protect family members and occupation of household members. Other questions will be about use of bed nets, use of health services, illness of past years, house spray, screening of windows and doors, use of larvivorous fishes and use of anti-malaria chemoprophylaxis. Similarly, questions about cause of malaria, symptoms of malaria, biting time, breeding sites and season of dense vector population will also be asked to determine their knowledge in order to design appropriate community malaria profile.

#### **4. Documents and secondary data :**

The relevant information on malaria on local situation will be collected by purposeful scanning through different documents and secondary data published or available from various sources (Annett and Rifkin, 1995). The sources will be ministry records relating to health, housing, environment, sanitation, service, city plans on local situation and disease. In addition, previous reports of surveys or studies will be explored if undertaken before to map out the situation properly (Annett and Rifkin, 1995).

For the purpose of collection of required information a documents review check-list will be prepared (see Appendix IV) based upon which information will be collected. The required information will be about population of the village, distribution patterns of population within village. Similarly, efforts to collect information about the major ethnic groups and their occupation and people's mobility and migration will also be attempted. Information about average household size, average income of people within the village, average dependent size and number of households in the community will tried to be collected. Efforts will also directed towards finding those documents which can reveal about the past records of malaria and about the local environment, e.g. climate, rainfall, humidity, temperature etc.

### **3.2.7. Information analysis :**

The information received from the above techniques in the form of statements, opinions and descriptions will be analyzed by the following procedures :

- identifying the categories of the information and writing up in the group to which it relate, i.e. Socio-economic aspects, elements of human behavior, location and provision of the formal and informal health services, etc.
- sorting answers related with research questions and objectives.
- interpreting findings and discrepancies or similarity in case of any deviations found in comparison to the previous surveys, studies or data.

### **3.2.8. Sampling :**

#### **1. Key informant interview :**

For the interview with the key informants, the respondents will be each ward incharge of the village. There are 10 wards in each village and from each ward people elect one incharge who are political leaders. Other respondents will include health post staffs i.e., in-charge, one auxiliary health worker, one auxiliary nurse midwife and one village health worker. Because they live in the community and have direct or indirect access with information about cases, trends, service delivery in community. Besides those, one government staffs from each departments of agriculture, irrigation, and forest working in the village and one local administrative authorities will be

interviewed. Similarly, interviews with village head, one local teacher, one traditional healer, one community formal and informal leader, one women's group leader, one religious leader, one social worker, one member of NGOs/INGOs working in the local area, one medical shopkeeper will also interviewed. An in-depth interview with chief district health officer of the area will also be performed. All together there will be 27 key informants.

## **2. Observation and semi-structured interview :**

For the observation purpose, based on the observation check-list (see Appendix II) information will be recorded from each sample household . Out of total 4310 households about 480 households will be observed. Semi-structured interview will be taken from the senior house member (with senior member as far as possible and if senior member is not available next to he/she in order) due to his/her more experience and influence in decision within houses. The interview will be taken with the member of same house where observation will be done based on interview guidelines written in Appendix III.

### **3.2.9. Sampling technique :**

For key informants interview, except those 10 numbers of ward incharges the selection of other informants will be done by purposive sampling. This will be for the

purpose of appropriate coverage of informants from all wards of the village. The number of other informants given above would be a tentative list. The actual number and selection of appropriate informants will be determined as and when necessary based on quality and quantity of information to be collected and nature and type of information required. However, total number of key informants will be in 15-17 numbers other than those 10 ward incharges. Efforts will be directed towards contacting informants from all wards as far as possible in order to make an equal coverage. Interview will be done in Nepali language with the help of interview guideline (See Appendix I).

For the observation purpose, area probability sampling technique will be adopted to obtain the number of households to be observed. Obtaining by the division of total population of the village (24564) by average household size (5.7) (an estimate of Nepal) approximately 4310 households in Panchkhal village have been estimated. From that numbers, 10 percent of total houses will be taken as sample for observation which will be 431 in numbers. Adding 10 percent of 431 houses to raise the degree of accuracy, the total number of houses for sample will be 474. But for the convenience in the collection of information the sample size will taken as 480. For the semi-structured interview the sample size will be the same i.e., 480. Because, interview will be taken from the same house member where observation will be done.

The selection of houses will be first done by obtaining a list of households and map from the village committee. In case of unavailability of map and list of households, research team will prepare mapping of the community and then dividing the whole village into 10 blocks. Forty-eight households from each blocks will be selected through random sampling.

### **3.3. Activity plan, 1998 :**

The study will begin from July and ends in December, 1988. Total days for data collection will be 8 weeks (56 days). But the working days will be 7 weeks ( 42 days and deleting 7 days for holidays). A one day introduction, discussion and orientation program about the theme and activities of research will be held for research team which will be conducted by coordinator and researcher on 30th June, 1998.

The interview with key informants will be taken by researcher, sociologist and epidemiologist, 3 interview per day and one each. There are only 27 key informants, so, interview will be completed within 9 days starting from 1st July, 1998.

Similarly, observation of households will be done by the members of research team i.e., researcher-1, sociologist-1, epidemiologist-1 and health assistants-2, all



together 5 persons except coordinator. The observation will be done based on observation check-list, so special training for research team is not essential. Total households required to be observed are 480. Every day 3 households by 5 research members will be carried out. Within 32 days observation of households will be completed. Review of documents and service statistics will be done by coordinator.

The semi-structured interviews will also taken by the same observation team such as 3 interviews everyday by 5 research members. The interviews will based on guidelines, so special training for the team is not essential. During the one day introduction program as mentioned above, orientation on how to carry semi-interviews and what information should be sought by interviews will be conducted to research team by researcher.

**Table 3.4 : Plan of activities to carry out the study**

Activities	30 Jun	July	Aug	Sept	Oct	Nov	Dec
Meeting of research team, orientation and discussion	↔						
<u>Data collection :</u> 1. Key informant interviews 2. Observation 3. Semi-structured interviews 4. Review of documents		↔ ↔ ↔ ↔					
Data analysis, interpretation of findings			↔				
Report writing				↔			
Submit report to govt. authorities with recommended control measures					↔		
Take govt. approval to implement the recommended control measures					↔ ↔		
Get budget to implement action							
Start intervention							↔

### 3.4. Budget and manpower requirements :

Necessary budget and manpower required to conduct the study is given below.

These are tentative figures and prepared based on present trend of payment in Nepal :

<u>Person</u>	<u>Number</u>	<u>Total days</u>	<u>Per diem allowances</u>	<u>Total</u>
Co-ordinator	1	56	USD 30.00	1680.00
Sociologist	1	56	USD 30.00	1680.00
Epidemiologist		1	56	USD 30.00 1680.00
Researcher	1	56	USD 30.00	1680.00
<u>Health assistant</u>	<u>2</u>	<u>42</u>	<u>USD 15.00</u>	<u>1260.00</u>
Total USD				7,980.00
Transportation cost @ 5 % of above total USD				399.00
Stationery @ 5 % USD				399.00
Miscellaneous @ 5 % USD				399.00
<u>Contingency @ 5 % USD</u>				<u>399.00</u>
Total US Dollars ( USD 1 = Nrs.57)				9,576.00

### 3.5. Ethical issues of study :

This study is aimed to identify socio-economic and human behavioral aspects conducive for malaria transmission in the village in order to develop a malaria profile.

In this course, the endeavor of research team is to interview and observe those aspects with respect to malaria transmission but not hurt or harass them. Unethical procedures, violation of people's rights and dignity will be avoided. Key informants will not be forced to answer the questions but request will be made with prior information. Any answers received from them but do not allow to be exposed, will be kept confidential and will not be used against them at any cost.

Similarly, observation of household and interviews with house member will be done only upon receipt of permission from household head or elder member and from respondents themselves. Only those information will be noted if it relates to malaria. In this course, anything that is seen e.g. privacy of life and household will not be exposed if it is not allowed by them. In short, ultimate goal to conduct this study is to find out elements of human behavior and socio-economic factors of the village related with malaria transmission and during study rights of the research subjects will be preserved.

### **3.6. Limitations :**

An ideal malaria profile of a malaria endemic area contains full information about all aspect of malaria epidemiology such as epidemiological, entomological, environmental, biological, socio-economic and behavioral aspects. But this study will provide only socio-economic and behavioral aspect of Panchkhal village.

The findings of this study could not be generalized to the other malarious areas. Because, small local variations either in environmental conditions or in elements of human behavior or socio-economic aspect in a given geographical area may be all important in determining the epidemiological pattern of malaria and are known to influence the degree of endemicity (Jambulingam et al., 1991).

The study is about socio-economic and human behavioral aspects of malaria transmission in Nepal. But less is known about this aspect in Nepal. I could not get study and evidence on this except some written by Kondrashin and Rashid (1987) for WHO/SEARO, New Delhi, India. So, lack of evidence on the aspect in the context of Nepal is serious limitation of this study.

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