CHAPTER THREE
CONCEPTUALISATION AND RESEARCH DESIGN

This chapter on methodology has two main sections emerging out of our research questions and the gaps identified in the review of literature, and our choice of an interdisciplinary approach to study the problem. The first part deals with conceptualization of the research problem. Research design and methods of data collection, including the procedure of data analysis have been discussed in the second part.

Conceptualisation of the Research Problem

A conceptual framework envisages that the human behaviour is deep rooted in ones social, economic, cultural, political and ecological contexts. Therefore, an understanding of disease/illness and health-related behaviour of people from their perspective in given contexts is essential for controlling and preventing disease. Past attempts to place individual health related behaviour in context have been judged largely unsuccessful due to narrow conceptualization of health behaviour as functions of psychological mechanism and personality traits (Duncan, Jones and Moon, 1996).

Illness perceptions are socio-culturally constructed. This means that beliefs about health and illnesses are grounded in particular socio-cultural milieus of a community, which contain a number of specific structural and cultural factors that stimulate and shape behaviour. People's perceptions and behaviour related to malaria are basically functions of incidence and prevalence of disease, which depend on the interaction of mainly three factors: agent host and vector against the background of social, economic, cultural and behavioural environment in a community and its ecological set up. Therefore, human behaviour related to malaria needs to be placed within a broader perspective.

In our framework, health behaviour of individuals is conceptualised around the way of life in social and ecological contexts of rural population and categorized into preventive actions/behaviour and treatment-seeking behaviour. Preventive behaviour is conceptualised as any activity undertaken by a person or a group of people for the purpose of preventing disease and remaining well. Treatment seeking-behaviour includes home remedy, self-medication, use of traditional healers and the use of health post/hospital services. In order to gain an understanding of human perceptions behind
behaviour regarding malaria illness, key variables need to be identified and conceptually linkages need to be established between perception/behaviour and the socio-ecological contexts and welfare services. It is assumed that preventive health behaviour and treatment seeking behaviour are influenced by various aspects of interacting socio-economic, cultural, and ecological and health service factors. Accordingly, the conceptualization is based on these interrelated variables.

**Ecological setting**

Ecological setting is the natural as well as man-made environment that influences both human behaviour and the occurrence of disease. The incidence of malaria is naturally determined by climate and ecology since the parasite (pathogen) and mosquito (vector) require certain temperature, rainfall, humidity, water-logging and terrain conditions to survive and infect human beings (Dutta and Dutt, 1978). In general, geographical location of a village and its biophysical environment such as forest, water, vegetation and climate determine the probability of malaria infections. Due to attitudinal variation and geographical features of Nepal, endemic malaria is limited in particular ecological settings such as, forests, forest fringes of the Terai and inner Terai, and river valleys and low land areas of the hills where malaria vectors, *An. fluviatilis* and *An. Culicifacies* breed and maintain the natural transmission. People’s perceptions of malaria illness and consequences of mosquito bites are directly and indirectly associated with their exposure to the risks of malaria. Curative and preventive actions against malaria/mosquito bites depend on the climate, season, density of mosquito and local environment. Location of villages (Hill and Terai, near forest), local climate (rainfall and season), natural and manmade mosquito breeding places, pathogens and vectors; housing types and their conditions are included in ecological factors.

**Socio-economic environment**

Malaria and socioeconomic conditions of people are intimately connected to each other. The social environment includes poverty, family income, occupation, caste, ethnicity and economic class that may encourage or discourage the malaria cycle. In rural Nepal, socioeconomic class/status can be categorized as poor peasant, low middle and middle peasant, and well-off class (Blaike, Cameron and Seddon, 2001). Most households (83%) are engaged in traditional subsistence farming and 44 percent of the rural households fall below the poverty line (UNDP, 2002). Poverty has further been
exacerbated by limited access to productive resource, high levels of underemployment or unemployment in the country (NESAC, 1998). Pervasive poverty and low levels of income force the people live in poor housing, poor sanitation and undernutrition with inadequate protection against mosquito bites and access to health care. Increase social stratification/inequality and poverty exacerbate the problem of malaria in different ways.

The people of Nepal can broadly be categorized into caste and ethnic groups. Groups of people who follow Hindu cultural tradition and fall within the Hindu caste systems are defined as caste groups. Brahman, Chhetri, Thakuri and dalits come under caste groups. Ethnic groups are those who fall outside the purview of the caste systems and have their own mother tongue, native area and cultural tradition. Magar, Tharu, Tamang, Danuwar, Rai, Limbu, Sherpa and other indigenous peoples belong to the ethnic groups of Nepal. Dalit and some ethnic groups (Tamang, Chepang, Majhi, Magar, Tharus) are poor, marginalised and backward as compared to other major caste groups such as Brahman, Chhetri and Newar (UNDP, 2004).

As a whole, majority of the poor are illiterate and surviving in extreme poverty and social deprivation. Very low level of incomes has constrained them from saving money for medical care and purchasing bed nets. Being traditional farmers, both men and women have to continue their domestic and occupational activities from dawn to dusk and sometimes, men need to work at night. Such activities increase the man-mosquito contact. The nature of occupation, work and poverty would affect the incidence of malaria as well as health related behaviour. Similarly, concepts of illness, disease, and health related behavior may vary from higher to lower classes due to differences in social and material conditions and their exposure to the risk (Stacy 1988, McKinlay 1973).

**Cultural environment**

The concept of culture refers to the socially acquired and learned patterns of thought, beliefs and behaviour of a social group in a human society (Harris, 1995). The shared ideas, beliefs and practices, and devices about health and illness constitute a major element in culturally constructed environment. Nepalese culture is socially stratified into ethnic groups, caste, class and religion where each stratum has its own cultural attributes, including ethnomedical knowledge, beliefs and practices. In rural areas, different ethnic and cultural groups of people use notions of supernatural and natural
causes while explaining the meanings and conditions of illness (Stone, 1977, Foster and Anderson, 1978). Each ethnic group is stratified into two or more economic groups, which may have different perceptions and behaviour across them. People's ideas about illness and behaviour are gradually altered when some elements of culture get changed through diffusion of innovations or purposive interventions from outside of the community or by change in overall culture.

Traditional medicine is one of the important factors impinging on health beliefs and behaviour of people. Herbalism, ritualism and shamanism are widely practiced in rural areas as forms of traditional or folk medicine. Each village has more than one traditional healers who are easily accessible to the villagers. Even in naturalistic origin of illness such as fever including malaria, traditional healers are consulted when suspicious of malevolent actions of evil spirits may arise. Along with the use of traditional medicine, people seek help from drug retailers, clinics and modern health care facilities. In the course of interaction with the traditional and modern health care providers, individuals have developed their own ideas/perceptions about malaria and its treatment, and they make a choice of treatment accordingly. Indigenous healing practices and belief systems are important factors that help to shape the ideas and health behaviour of people.

**Epidemiological factors**

Physical, biological, socio-economic and cultural environments play important roles in the epidemiology of malaria. The growth and development of malaria vectors depend on variable climate, temperature, rainfall and presence of standing or gently running water. The climate and ecology in Nepal vary from south to north due to the altitudinal variations. Therefore, it is useful to divide Nepal into ecological zones to see and understand these relationships. For a small study like this, it is critical to remember that even though we are taking two different ecological zones. There will be regional variations within theses and therefore, only the larger data sets throw up the ecological linkages, which we presented in Chapter I. Although Kavre is a hill district, some of its parts such as the river valley and low places at altitude between 300-1200 m with warm climate are favourable for the breeding of *An. fluviatilis* mosquitoes and malaria transmission (DDC of Kavre, 2000). Unlike Kavre, Kanchanpur, which is one of the Terai districts, situated in the southern western part of Nepal with adequate forest cover, rivers, swampy land and sub-tropical climate is suitable for malaria transmission (DDC
of Kanchanpur, 2002). Poor people who live on riverbanks and forest fringe are more vulnerable to malaria infections than other people. Settlements close to mosquito breeding sites, poor housing structure, and collection of fresh water around houses and paddy field, and agricultural or other occupational activities encourage man-mosquito contact. These factors create the variations within ecological zones.

**Modern health care services**

Modern health services (hospital services) in Nepal are geographically inaccessible and economically unaffordable to the vast majority of population because hospitals are established in urban areas and in favour of those who are better off. However, each Village Development Committee (VDC) has a Sub-Health Post (SHP) facility which is not easily accessible to all residents of the VDC. Moreover, such SHPs are poorly functioning due to the poorly trained manpower, or long absence of staffs, lack of drugs and examination facility. SHP has no lab facility for proper diagnosis and treatment of malaria. If there is lack of drugs, proper diagnosis and treatment, people perceive it as poor facility and tend to delay in attending the facility or seek treatment from other alternative sources of treatment such drugs retailers and clinic with lab facility. Seeking or not seeking help during illness from the health facility may be determined by how health staffs respond to the people, and how they interact and communicate with the patients. Long waiting time, delay in malaria diagnosis and long walking distance to the facility can discourage people from visiting SHP or HP during illness. The people who visit public facilities and interact with the staff may learn some new ideas and technique about illness. So there should be some impact of modern health services on perceptions and health behaviour of the people.

**Perceptual factors**

Knowledge and perceptions of febrile illness and malaria, felt needs, perceptions of health services and communication/diffusions are included in perceptual factors.

**Knowledge/perceptions:** Based on their past experiences of malaria and interactions with other people and health systems, local people have their own perceptions, knowledge and belief about illness. But different individuals or different group of people may have distinct understanding of malaria including perceptions of the risk of contracting illness (perceived susceptibility) and perceptions of severity such as the possible clinical consequences and social consequences. General ideas about illness and
perceptions of susceptibility and vulnerability may influence the preventive and
treatment seeking behaviour.

Past and present illness situations or presence of signs and symptoms create some kind
of illness threat among individuals. The combination of perceived susceptibility and
perceived severity had come to be labeled as perceived disease threat (Strecher,
Champion and Rosenstock, 1997). It can be assumed that the more one sees oneself as
susceptible to malaria infection and to becoming severely ill with the disease, the more
ones feels threatened by malaria. Individuals who feel under a threat of illness are more
likely to make use of preventive/protective measures and to seek medical help from
available health facility.

**Felt health needs:** People begin to respond to the problem when they become conscious
and worried of their health problems. The process of seeking out means for alleviation
of the suffering is called felt need (Banerji, 1992). Some affected people who do not
actually seek alleviation of suffering are nevertheless worried about the suffering
(worry, awareness). In some cases, people are not worried but are conscious of it. There
would be other people, who do not respond at all to the problem. While meeting felt
needs, ‘it initiates a chain reaction, those who were conscious get worried or even take
action; and those who were not even conscious develop consciousness, worry or even
felt needs’ (Banerji, 1992:11). Hence, there is a relation between felt needs and health
behaviour.

**Perceptions of available health services:** Based on their experiences about the use of
health facility and outcome of the services received, people assess the quality of health
services including the cost-benefit, effectiveness of and practical barrier to available
services. People use the health facility if they perceive that the health service is good;
treatment is effective and not expensive, and there is no barrier to get the service from
there.

**Health communication/diffusion:** In addition, people may learn about the disease from
health message provided through radio and other media and while interacting with
village health and development workers. They also occasionally visit other communities
and migrate temporarily to urban areas of Nepal and other countries where they can
learn new ideas and technique for coping the health problems. The ideas and techniques
learnt from outside gradually get diffused into the local culture and then local
perceptions and behaviour are modified. Therefore, communication and diffusion of innovations from outside may influence people’s health behaviour.

Most of the disease control programmes use communication strategies to change behaviour without considering micro and macro-sociological factors including dynamics of disease transmission in a given context. In order to evolve an alternative approach to behavioural interventions, we need a very different conceptualization that focuses on comprehensive understanding of people’s illness perception, health related behaviour and its structural constraints. The real meanings of classical epidemiological triads and determinants of community perceptions and behaviour related to illness and malaria can be explored when they are placed in a broad context and a broad conceptual framework that links illness and behaviour with individuals and group’s knowledge/perceptions, social, cultural, economic, ecological and health services factors. Our conceptualization helps to identify those behaviours, which require minor changes that are possible through appropriate communication strategies, and those, which can be modified through socioeconomic transformation in the given contexts.

Research Objectives

The objective of this research is to assess people’s perceptions and health behaviour with respect to malaria in the ecological, socioeconomic, cultural and institutional contexts of rural Nepal. Specific objectives are as follows:

1. To examine the patterns of malaria in communities in their social and ecological settings.

2. To explore the perceptions, knowledge and beliefs regarding febrile illness-malaria, and past experiences about its treatment and preventive practices.

3. To assess the behaviour and responses of different sections of population to the health services and malaria control activities in the study areas.

4. To identify the key factors (such as socioeconomic groups, culture etc) influencing preventive and health-seeking behaviour of the people in the study areas.
Research Design

An attempt to understand malaria related health behaviour of people in the social and ecological contexts is essentially an interdisciplinary exercise. This study adopts an interdisciplinary approach that blends qualitative and quantitative methods and multiple sources of data. Such approach can help us to gather a wide range of data required for the study and can enhance the validity of the study and its generalisability (Marshall and Rossam, 1995). I used epidemiological and quantitative methods for generating and analyzing quantitative data such as the incidence and prevalence rates, distribution and variance of perceptions and behaviour. Similarly, survey techniques were used to assess the socio-economic background of the study population. Anthropological or qualitative methods were employed to collect contextual information and gain an in-depth understanding of the people's perceptions and their health-related behaviour from their own perspective.

Selection of study areas and villages

Considering the objective of the study, the following criteria have been set up for the selection of the study areas.

a) One district from hill and another district from the Terai region.
b) The Hill and Terai districts should have higher malaria prevalence.
c) One Village Development Committee (VDC) having comparatively higher prevalence rate of malaria from each district should be included as the study area.
d) VDC should have at least one government health facility (SHP).
e) Within selected VDC, one study village should be from nearby health post facility and another from five km away from the health facilities.

In order to explore community understanding of malaria and their preventive and health seeking behaviour in different settings, the hill and the Terai regions have chosen. This would help in studying the implications of ecological (bio-physical) settings. Kavre district is selected from the hill region and Kanchanpur district from the Terai belt (see Figure 3.1). Kanchanpur district is situated in the Far-West Terai region between 160 to 1528 meters altitude (See chapter IV for detail description). It has sub-tropical climate. All the 19 VDCs and municipality areas are more or less affected by malaria problem. Malaria epidemics occur periodically in different VDCs. In 2002, malaria epidemics
Figure 3.1: Location Map of the Hill and Terai Districts included in the Study

Legend

Boundaries
- International
- Development Region

Eco Regions
- Mountain
- Hill
- Tarai
- Kathmandu Valley

Study Areas
Figure 3.2: Distribution of Health Facilities and Location of Jhalari VDC in Kanchanpur District in the Terai Region

Legend

- boundaries
  - International Boundary
  - District Boundary
  - Taluka Boundaries (DDC 2003)
  - VDC Boundaries (DDC 2001)
  - Wildlife Reserve Area

Settlement by Population size (Census 2001)
- Less than 250
- 250 - 1500
- Greater than 1500

Health Services (DDC 2001)
- Sub Health Post
- Health Post
- Primary Health Centre
- Hospital
- Ayurvedic Mission Centre

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outbroke in Krishnapur, Jhalari, Daiji VDCs and Jimmuwa village. Annual parasite incidence (API) of malaria was highest in Kanchanpur (21.29) in Nepal (DHS, 2004). Significant variation in API of malaria can be observed across VDCs of the district.

Kavre is a hill district situated in the eastern part of the Kathmandu valley in the central region of Nepal at 350 to 3018 m altitude. Geophysically, it can be divided into the hill (mid-mountain) and plateau/low land areas (locally known as bensi, tar and khonch). About 80 percent of the district is covered by hill areas, which is located above the 1220 meters altitude. Bensi, tar and khonch areas between 350 to 1219 meters altitude account for 20 percent land area of the district. Kavre has three climatic conditions: subtropical in low land areas located below 1200 meters; warm temperate in mid-hill and upper valleys and cool temperature in some uphill areas. Besides Banepa and Panauti Valleys (situated at around 1400 meters), all bensi, tar and khonch areas provide minimum natural conditions for malaria transmission. Of the total 87 VDCs, 40 are partially affected by the malaria problem. Kavre had highest API (1.28) among hill districts in 2002 (DHS, 2004).

Since our focus is the behaviour of populations related to malaria, we have selected VDC having comparatively higher prevalence of malaria in the district. In 2002, much higher Annual Parasite Incidences were found in Krishnapur (98.8) Jhalari (54.9) and Daiji (44.6) of Kanchanpur district. In Kavre, much higher APIs reported in Mahadevsthan (9.9), Jyamdi (6.6) and Panckhal (4.5) as compared to other VDCs. Considering high prevalence of malaria and feasibility of the study, Jhalari VDC from Kanchanpur and Mahadevsthan VDC from Kavre are included in this study.

On the basis of physical accessibility (distance), one village nearest to the local health facility, SHP and another village located 5 km from the SHP facility have been included. The following two villages from the selected VDC of each district are included as focused study areas:

(a) Jhalari VDC, Kanchanpur
- Kasaroul Banjaria Village of Jhalari VDC which is nearby SHP facility
- Kalapani Beldandi village of Jhalari VDC which is 5 km away from the SHP

(a) Mahadevsthan VDC, Kavre
- Pouwa Gahate village where the SHP is located
- Dhaitar Judigaun Village of Mahadesthan which is located away from the SHP facility

Jhalari VDC included in this study, is located in 20 km east of Mahendranagar, headquarter of the Terai district (see Figure No. 3.2). This VDC is comprises of only seven wards. According to population census 2001, Jhalari comprised of 2717 households and 15526 persons and one of densely populated areas. Ethnically, this area is inhabited by the indigenous people, Rana/Dagaura Tharu and the migrated hill people (Brahmin/Chhetris and Dalits).

Table 3.1: Summary of Sampling Procedure and Sample Size

<table>
<thead>
<tr>
<th>Ecological Belts</th>
<th>Districts</th>
<th>Selected VDCs</th>
<th>Selected Villages</th>
<th>Total Households and population</th>
<th>Sample Households</th>
<th>Sample Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terai Purposive Selection</td>
<td>Kanchanpur</td>
<td>Jhalari</td>
<td>Kasaroul Banajria (Nearby SHP) - Kalapani Beldani (Away from SHP) Purposive selection</td>
<td>280 HHs 1916 Pop. 273 HHs 1823 Pop. All are included in Baseline Survey</td>
<td>93 HHs 91 HHs</td>
<td>93 91</td>
</tr>
<tr>
<td>Sub-total</td>
<td>1</td>
<td>1</td>
<td>Two villages</td>
<td>553 HHs 3739 Pop.</td>
<td>184 HHs</td>
<td>184</td>
</tr>
<tr>
<td>Hill Purposive Selection</td>
<td>Kavre Vستان</td>
<td>Mahadevstan</td>
<td>Pouwa Gahat (Nearby SHP) - Dhaitar Judiguan (Away from SHP) Purposive selection</td>
<td>163 HHs 861 Pop. 262 HHs 1491 Pop. All are included in Baseline Survey</td>
<td>54 HHs 87 HHs</td>
<td>54 87</td>
</tr>
<tr>
<td>Sub-total</td>
<td>1</td>
<td>1</td>
<td>Two villages</td>
<td>425 HHs 2352 Pop.</td>
<td>141 HHs</td>
<td>141</td>
</tr>
<tr>
<td>Total</td>
<td>Two districts</td>
<td>Two VDCs</td>
<td>Four villages</td>
<td>978 HHs 6091 Pop.</td>
<td>325 HHs</td>
<td>325 persons</td>
</tr>
</tbody>
</table>

Note: HHs refers to households
Kasaroul Banjaria of the Terai district, a study village is located nearby SHP, behind Jhalari Bazar (Fig. 4.5). It is located one kilometer to the north of Mahendra Rajmarga (East-west highway). This village consists of three small hamlets (settlements): Rana hamlet, hill people’s hamlet and Banjaria hamlet. The Rana hamlet is the main part of the village is located in the west on the bank of the Syali River. The in-migrant hill people have settled in the northern and the eastern parts of the Rana toles. Banjaria is located in the eastern part of the Rana toles and behind Jhalari Bazar and SHP building. There are 280 households in Kasaroul Banjaria village (Table 3.1).

Another study village in the Terai (Jhalari) is Kalapani Beldandi village, which is located 5 kilometers away from Jhalari SHP facility and surrounded by the forest from North West side (Fig. 4.5). The village consists of three distinct helmets called Kalapani, Jhandabhoj and Beldandi. In Kalapani, there are 146 households of mainly hill Brahmin/Chhetris and Dalit people. Jhandabhoj is a Tharu hamlet comprising of 34 households. Beldandi hamlet comprising 93 households is inhabited by the hill and the Tharu people. There are a total 273 households in Kalapani Beldandi village area.

Mahadevsthan VDC is situated in the northern part of the district and southwestern part of the Indrawati River, which act as a natural border between Kavre and Sindhupalchok districts (Fig. 3.3). Topographically it is composed of the low land called tar and phat (paddy field) and sloppy terraced land. It is situated between 600 to 1400 m altitude. Most people in this VDC are more or less exposed to the risk of malaria.

The Mahadevsthan VDC of Kavre, a hill district is inhabited by various castes and ethnic groups. More than half of the total population belongs to the so-called upper caste Hindu groups, Brahmin/Chhetris and 16 percent to Newars. Another 16 percent are Danuwar, indigenous people of this area. Another hill indigenous people, Tamang constitutes only 5 percent. Remaining 10 percent are Dalit people. In terms of economic condition, 30 percent of the total households are very poor, 42 poor and 28 percent medium/better off.

Pouwa Gahate village where public health facility is located is a study village (Fig. 4.6). This village is located an altitude between 800 to 1060 m. It consists of three settlements. This village comprising of 163 households is typically multiethnic, multicultural and multi-linguistic communities. Dhaitar Judigaun is another study village consisting of 266 Households, situated in the western lowland areas between 600 to 800 m altitudes. It is 4 to 5 km away from the SHP facility which is located at the top.
of the mid-hill. People from this village do not have access to government health facilities of the VDC because it is most difficult to walk uphill areas during illness. This village has two hamlets. Judigaun is the oldest settlement comprising 136 households, Danuwars. Dhaitar hamlet has 126 households mainly composed of the Brahmins.

It needs to be emphasized that the selections of the regions and the study population was purposive so as to include different ecological contexts. At the same time since the study is about determinants of health behaviour we have not tried to focus on a representative sample, rather, we have attempted to explore the wide range of variables that we need to study. Hence, our results will project relationship between health behaviour and variables only; they will not show how they are distributed in the entire population. The importance of the determinants will be only for the population of the study villages.

**Coverage and selection of households**

Study populations are the people living in Pouwa Gahate and Dhaitar Judigaun villages of Mahadvesthan VDC (hill) and Kasaroul Banajaria and Kalapani Beldandi villages of Jhalari VDC (Terai).

(i) All households and their members are included in the baseline survey.

(ii) For qualitative information, some key informants and certain people of the selected villages who have much experience and information about the village culture, illness and malaria problem were selected purposively.

(iii) One third of total households from each village were selected by using systematic random sampling procedure for a detailed survey study. First, a household was selected randomly and then every third household was included for the interview survey.

Out of the 163 households in Pouwa Gahate village of the hill area, 54 households have been included for the sample survey (Table 3.1). Eighty-seven (87) households are selected from the total 262 households of Dhaitar Judigaun village of the Mahadevsthian VDC. Ninety-three households from Kasaroul Banjaria and 91 from Kalapani Beldandi villages of Jhalari of the Terai district have been selected for the detailed study. A pretested schedule was used to interview an adult person from each of the selected households from each settlement (hamlet)
Tools and Techniques of Data Collection

Both quantitative and qualitative techniques are essential for data collection. They are as follows:

Qualitative techniques

(a) In-depth semi-structured interview
(b) Group discussions
(c) Case report
(d) Direct non-participant observation

(a) In-depth interview of informant: It is a series of conversation between researcher and the informant on different aspects of the study. It helps the researcher to uncover the local people's perspective, cultural practices and behaviour related to illness and malaria based on their past experiences. An interview guide was prepared to conduct in-depth interview for the selected informants of the study areas (Appendix-4).

(b) Group discussion: Group discussion (GD) consists of 6-10 adult persons of the same locality having more or less similar characteristics and experiences. In a group discussion setting, a permissive environment is created in which participants freely express their differing views and opinions about their problem. Some community members were invited to participate in the group discussion. GD sessions were conducted by the researcher himself, and discussions were initiated by asking open-ended focus questions on the topics of discussion. Simple guidelines with carefully worded and open-ended questions were prepared used for conducting GD sessions (Appendix-5).

(c) Case report: Case report approach was also adopted for getting wide and deeper perspective on particular cases in terms of perceptions and behaviour of participants in their context. Here 'case' refers to a person, who had faced severe or recurrence of febrile illness and malaria. A detail history of cases and their help-seeking behaviour were investigated by interviewing the cases themselves and their family members.

(d) Direct Observation: The data on social settings, housing, settlement patterns, gender roles, patterns of behaviour, occupational activities, health care facilities, water supply, sanitation and other aspects of physical environment were collected by direct observation or non-participant observation technique.
Quantitative tools and techniques

(a) Structured schedule for baseline survey

(b) Semi-structured interview schedule for sample survey

(c) Structure schedule/forms for fever survey and blood slide collection

(a) Structured schedule for baseline survey: A brief structured schedule was constructed to collect basic information about demographic and socioeconomic conditions of people of the study villages. Survey schedules consisted of questions and items about age, sex, caste, religion, family size, marital status, education, occupation, income, landholding, food sufficiency, type of house, latrine, febrile illness and health seeking practice for malaria were used to conduct baseline survey (See appendix A-1)

(b) Semi-structured interview schedule for sample survey: The schedule consists of predetermined set of carefully worded and open-ended as well as closed questions about different topics and subtopics of the study problem (See Appendix A-3). It was used to interview the respondents from selected sample households.

(c) Schedule/forms for fever survey and blood slide collection: Simple survey form in which some important information of patients such as the village/settlement, house number, the household head’s name, age and sex of patient, the types and duration of fever could be filled up, was prepared for fever survey (Appendix-2). Blood slides were collected from each patient with fever. Fever survey was conducted from May to October 2003 (Baishakh to Aswin of 2060 BS) along with the base line survey in each study village of Kanchanpur and Kavre.

iii) Cross-checking of data: Cross-checking and rechecking of data were done in the field while collecting data. Both qualitative and quantitative data were cross-checked by probing and including questions that help to cross-check, and asking the same questions to different people, like, the respondent, the respondent’s neighbour, the health providers and the drug sellers. Each field note was rechecked and expanded after interview and observation. Information recorded in tape-recorder during in-depth interview and focus group discussions were checked immediately after completing the interview and FGD session.
Data collection process
Entering and settling down in rural areas of Nepal has become challenging and risky due to the conflict between government’s armed forces and Maoist insurgents. Both study areas of Kanchanpur (Terai) and Kavre (Hill) have been affected by Maoist insurgency. Before entering the field, I visited Chief District officer (CDO), the Public Health Officer and leaders to inform them about the purpose of the fieldwork activities, and to obtain permission and cooperation from the local administration. After getting verbal permission and assurance of cooperation from the district authority, field study activities were initiated.

The actual fieldwork was started in February 2003. In the second week of February, the investigator moved to the Mahadevsthan VDC of the hill district and stayed in the Village Health Worker (VHW)’s house at Ranitar, who has been running a medical shop (known as Ranitar Medical) and providing treatment to the villagers. It was beneficial to stay at his house, observe the relationship and the communication between patients and treatment provider at the medical shop. Staying and interacting with patients and their caretaker at medical shops made me familiar with local people. Then I visited the local officials, leaders, traditional healers and teachers to brief them on the fieldwork activities. The people of the selected villages, Pouwa Gahate and Dhaitar Judigaun were met at their homes. Initially they were hesitant to interact with me because they were suspicious of my role. I was very careful while dealing with the people by presenting oneself as a mere researcher. The initial two months were spent in visiting people’s houses, attending their fields and other activities. Meeting different people at their homes, at the field, at teashops and milk collection centres enabled me to become closer to them. In the course of continued interaction with them, villagers began to trust me as a malaria researcher.

The third week of April, I moved to Mahendra Nagar, the district head quarter of Kanchanpur and consulted local leaders and malaria staffs of the district public health office. They suggested me commuting from Mahendrangar to Jhalari daily by local bus instead of staying in the village because the security situation was uncertain and an outsider might be arrested or abducted at night by both sides: security persons and Maoist cadres. Initially, for a few days, the suggestion was followed and local leaders and people were visited by commuting daily from Mahendra Nagar. In the course of time, local leaders and teachers me assured that health related professionals and
researcher could stay and work in the village safely. Then I began to stay in a Tharu leader's house, who was ex-Vice Chairman of the Jhalari VDC of the Terai district. Later on, some other villagers also invited him to stay in their houses. In this way the researcher gradually began to settle down in the village in order to carry out the fieldwork smoothly.

After the friendly relation, I started approaching house to house introducing myself to the villagers and making a list of total households. Initially, some villagers suspected about my role. The main purpose of visiting and interacting with them was clearly explained to the people. My assistant also communicated with the villagers the fact that I was a student. Despite the fact that some villagers regard me as a medical doctor and expected medical helps from me. In some cases, they were advised to seek timely health care from government facility and some people with headache or fever or bodyache were also provided with some tablets of minor medicine such as antipyretic and painkiller tablets. Asking their heath problem and providing some minor medicines made me easier to interact with them. However, care was taken neither to be medical doctor nor government's health staff. Moreover, meeting different people at their homes, in the paddy field, at the teashop and health post enabled me to build rapport and gain confidence of the villagers. They began accepting me like an inhabitant of their villages. Gradually the villagers were happy to see me again and again in their village and started communicating problems and difficulties.

Building rapport with individuals especially with different local leaders, traditional healers and important informants and villagers at large was very important for living safely in the villages and continuing the fieldwork. Having gained the confidence of the different strata and groups of people, I became closer to them and assured them that their information would be kept confidentially and would be used only for writing thesis report, that their role, activities and information were very vital for data collection and were useful for gaining in-depth understanding of febrile malaria as a health problem in their contexts.

**Baseline survey**

During the period of the initial visit and rapport building phase, I identified the settlements and total households of the study villages, so as to design and conduct the baseline survey. A total household survey was required for basic information about socioeconomic conditions and illness including malaria fever in the recent past.
Schedules containing questions, items to be asked such as age, sex, caste, religion, family size, marital status, education, occupation, income, land, febrile illness and health seeking practice for malaria were used to conduct baseline survey (See Appendix A-1). It took about one month to complete the survey from each study areas.

**In-depth interview**

An interview guide contains main topics/sub-topics such as illness category, perceptions/beliefs about fever and malaria, mosquitoes, treatment seeking for illness, and some open-ended questions under these topics (Appendix, A-4). Sixty persons who have had recent and past experience of malaria fever, and key informant such as traditional healers, local leaders, teachers, health workers, medical retailers who can explain much about local illness situations and malaria problem of the villages. From each village, 15 to 16 informants were identified and interviewed. The interview was tape-recorded and short notes were prepared during the interview. Verbal consent was taken before conducting and tape-recording interview. It took some 75 to 120 minutes to complete one in-depth interview. Some informants were interviewed two or three times unless required depth information was elicited from them. In addition, qualitative information about malaria related activities and events were collected from the beginning to the end of fieldwork (March 2003 to September 2004). Collection of quantitative and qualitative data was interlinked and often carried out simultaneously.

**Group discussion**

In order to explore the community perspective on illness and malaria fever, 12 group discussions (three group discussions in each study village) were conducted in study areas. Of these, four were female groups (two from the Terai and two from the hill) and two groups belonged to the poor Dalits. Two groups comprised of the indigenous peoples (poor and not so poor) and another two groups comprised of the poor Brahmin/Chhetris. The remaining two group discussions were held with the participants from the well-off and not so poor Brahmin/Chhetris. Some adult people belonging to particular groups of the villages were invited to participate in group discussions and those who consented to my request were included in the discussion. The investigator acted as moderator and conducted the discussion using the discussion guideline (Appendix A-5). Some discussions were conducted in public schools and some in the community meeting places of the villages. Each discussion was tape-recorded and
important points noted down during the discussion. Immediately after the discussion, the tape was checked and transcribed.

**Sample household survey using semi-structured interview schedule**

A semi-structured interview schedule was prepared considering the objective of the study. On the basis of the initial phase of qualitative information and baseline survey, the schedule was again redesigned and pretested (Appendix A-3). One third of household heads or senior adult family members of the households were interviewed using semi-structured interview schedules. While selecting sample households, a systematic sample procedure was employed. A list of households from each study village was prepared initially. Each assigned household number was written in a small piece of paper and rolled up. All the rolled papers were kept and mixed in an empty bucket. And only one rolled piece of paper was randomly drawn to select the first sample household. Then every third household was chosen for a detailed interview. Before conducting interview, verbal consent was obtained. The respondents were interviewed at their homes on their convenient days and times. Interview survey was carried out from August to December 2003 and May to June 2004.

**Fever survey and blood slide collections**

With a view to assessing the prevalence of febrile illness in the study areas, one person with a lab assistant or related qualification was assigned to visit each house of study village at least once a month. Family members of each household were inquired about occurrence of fever in the last four weeks (Appendix-2) and the thin and thick blood smear slides using finger prick method were prepared from persons if they were found suffering from suspected malaria fever. Rapid Malaria Test was also done on the spot using OptiMAL Assay Malaria test kits for the patients who had high fever and complaining symptoms of malaria. Informed consent was obtained from the patients and their guardians before taking blood samples.

OptiMAL is an antigen detection test, which can be used without special instruments, requires finger prick blood, small test well and buffer solution. One drop of colloid/buffer solution was added to a test well containing reagent and four drops were added to a second well. About 10µl of blood was then placed into the first well with a pipette. The essay test strip was then placed into first well and the strip was to the second well for clearing it. Interpretation of the assay results was performed.
immediately after completion of the clearing step. The whole process was completed within 15 minutes. The strip can detect both *P. vivax* and *P. falciparum* cases. The optimal test demonstrated 97 percent sensitivity and 98 percent specificity in Nepal (Sherchand, 2002) and another study showed 85 percent sensitivity and 100 percent sensitivity with 100 percent positive predictive value (Ghimire *et al.* 2004). The active fever survey and blood smears collection and optimal tests were continued for six months (from May 16 to October 18, 2003) in each study village. The collected blood smears (slides) were brought to local malaria examination facility for staining and examination. When blood slide/OptiMAIL ssay examination conformed the human subjects infected with malaria parasites, those persons were referred to the nearest health facilities to get appropriate treatment for malaria.

**Case reports**

In each village, two individuals who had recently suffered from severe fever/malaria or repeated attack of fever/malaria and had typical experiences about recognising malaria fever and getting treatments were identified as cases. Such cases were intensively investigated by recording their case history, and through intensive interviews with them and their family members.

**Direct non-participant observation**

Data about social and health care settings such as housing, settlement, family structure, gender role, occupational activities, health care facilities, sanitation and other aspects of physical environments were directly observed and field notes were prepared. Health care behaviour for fever at home and traditional healers were also observed. Relation and communication between patient and health care providers at SHP and medical shops were also observed and noted down using non-participant observation techniques.

**Secondary data collection**

Some relevant secondary data such as official records, published materials, government reports, district profiles and Census reports were gathered from sub-health post, and district health office, Epidemiology and Disease Control Division, Department of Health Services of Ministry of Health, Office of District Development Committee of each district and Central Bureau of Statistics.
Units of Data Analysis

The household is the first unit of data analysis. Location of villages and socioeconomic variables are used in analysing and interpreting data on the households. The responses of each respondent/individual within households of different economic groups are also analysed for some key data sets. Thus individuals make our additional unit but within the selected households.

Economic stratification of the households

Nepal being a predominantly agrarian society, her village economy is mainly based on agriculture and almost all households are fully or partially engaged in agriculture. Economic status of people is determined by the ownership of agricultural land and work opportunities. Based on people’s control over land resources and their occupational activities, households in the study areas have been stratified into three strata: i) the poor, ii) not so poor and well-off for the purpose of data analysis and interpretation.

Table 3.2: Distribution of the Sample Households by Occupations and Landholding Sizes

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Landholding</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Landless/less than 1 acre</td>
<td>1.0 to 3.5 acres</td>
</tr>
<tr>
<td>1. Adhiya and wage labourers</td>
<td>99 (64.3)</td>
<td>14 (10.2)</td>
</tr>
<tr>
<td>2. Tailoring, Blacksmith and cobblers with agriculture</td>
<td>9 (5.8)</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>3. Agriculture and foreign employment</td>
<td>13 (8.4)</td>
<td>21 (15.3)</td>
</tr>
<tr>
<td>4. Agriculture with additional occupations such as carpenters/mason, animal husbandry and poultry</td>
<td>14 (9.1)</td>
<td>39 (28.5)</td>
</tr>
<tr>
<td>5. Agriculture with retail shops and driving</td>
<td>7 (4.5)</td>
<td>9 (6.5)</td>
</tr>
<tr>
<td>6. Agriculture with teaching and other jobs</td>
<td>8 (5.2)</td>
<td>25 (18.2)</td>
</tr>
<tr>
<td>7. Agriculture only</td>
<td>4 (2.6)</td>
<td>26 (18.9)</td>
</tr>
<tr>
<td>Total</td>
<td>154 (47.4)</td>
<td>137 (42.2)</td>
</tr>
</tbody>
</table>
Of the sample households, 47.4 percent that had less than one acre of land or were landless with or without leasing in land (adhiya, sharecropping) are considered as poor (Table 3.2). However, some of the households in this category cannot be called poor due to their secure jobs and regular income despite absence of land as a resource. Sixty-four percent households having land less than one acre were leasing-in land and also engaged in wage labour. The remaining 36 percent did not lease-in land but were engaged in other occupations as shown in Table 3.2. Eight households with teaching jobs and another six running retail shops and driving buses were excluded from the poor households in our economic stratification. They were shifted to the not so poor category. All the remaining households constitute the ‘poor’ who were engaged in wage work or other petty business in the village economy (Table 3.3).

Table 3.3: Distribution of Sample Households by Economic Class in four Villages

<table>
<thead>
<tr>
<th>Districts and VDC</th>
<th>Villages</th>
<th>Economic Status</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Poor</td>
<td>Not so poor</td>
<td>Well-off</td>
<td>Total</td>
</tr>
<tr>
<td>Jhalari VDC, Kanchanpur (Teria)</td>
<td>1. Kasaroul Banjaria</td>
<td>26 (28.0)</td>
<td>41 (44.1)</td>
<td>26 (28.0)</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>2. Kalapani Beldandi</td>
<td>46 (50.0)</td>
<td>34 (37.4)</td>
<td>11 (12.1)</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Sub-total</td>
<td>72 (39.1)</td>
<td>75 (40.8)</td>
<td>37 (20.1)</td>
<td>184</td>
</tr>
<tr>
<td>Mahadevsthan VDC, Kavre (Hill)</td>
<td>3. Dhaitar Judigaun</td>
<td>35 (40.2)</td>
<td>33 (37.9)</td>
<td>19 (21.8)</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>4. Pouwa Gagahate</td>
<td>32 (59.3)</td>
<td>17 (31.5)</td>
<td>5 (9.3)</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Sub-total</td>
<td>67 (47.5)</td>
<td>50 (35.5)</td>
<td>24 (17.0)</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>139 (42.2)</td>
<td>125 (39.7)</td>
<td>61 (18.2)</td>
<td>325</td>
</tr>
</tbody>
</table>

Forty-two percent (137) of the total households own land between 1 and 3.5 acres. Of these, 28.5 percent were engaged in agriculture as well as different occupations such as carpenters/masons, animal husbandry and poultry, teaching/other jobs (18.2%), working in foreign countries (15.3%), Adhiya and wage labourers (10.2%), and retail shops (6.5%) (Table 3.2). Twenty-seven households with teaching and other jobs were excluded from the not so poor strata as they had handsome earning, saved resources every year and enjoy better economic status. They were moved to the well-off category. However, 15 households from less than one acre land group but with teaching and other occupations (retail shop and driving) were included in here as ‘not so poor’. Thus, the total number of not so poor households becomes 125 (Table 3.3). Only 10.5 percent of the total households have greater than 3.5 acres of the land. Of these 47
percent households have family members with teaching and other secure jobs. All 34 households in this landholding category and 27 from the landholding category of 1 to 3.5 acres, were identified as the well-off households. After combining the size of landholding and occupations, the economic stratification of the households is presented in Table 3.3.

Of the total 325 sample households, 42.2 percent belong to the poor, 39.7 percent the not so poor and 18.2 percent the well-off stratum. The percentage of the poor households is highest in Pouwa Gahate of the hill as they had marginal lands and were found to be engaged in seasonal wage labours in the periphery of their villages. The number of households belonging to the well-off stratum are higher in Kasaroul and Dhaitar villages of the Terai due to their ownership of larger sizes of the agricultural land and secure jobs. Using this similar procedure of the stratification, it was found that the base line survey (total households) provided matching results as 45.3 percent of the total households are the poor, 41.2 percent not so poor and 13.5 percent the well-off households.

This economic stratification was verified by cross-matching with household income, food sufficiency as well as additional information collected from sample survey about possession of some assets such as radio, TV, bicycle, motorcycle, cart and tractor, and number of cattle.

Methods of Data Processing and Analysis

Interviews recorded in tapes were transcribed in the local language. The main themes of the interviews were translated into English language. The field notes were also expanded and combined with them. Each transcribed interview has been kept in separate file. The text have been read and reread carefully and irrelevant information and data have been avoided. From each interview as well as discussion, a bit of relevant data was selected and assigned it to a category. In this way, the themes and dimensions of data have been grouped and organized different categories, topics and sub-topics. The techniques of domain and taxonomic analysis were used for qualitative data analysis (Spradley, 1979). For this, a domain analysis worksheet was prepared to enter certain information and to uncover domains embedded in the sentence spoken by my informants. Then a sheet for taxonomic analysis was prepared and the selected domains were entered. A folk taxonomy helped to reveal subsets and categories of local or folk
terms and these are related to different domains and themes of in-depth interviews. It helped the researcher to identify the emergent theme and develop possible explanation, and critically reflect the connection between data and their meaning. Compact forms of data have been displayed in the forms of matrices, lists, chart, tables, network diagram/typologies. One category of data was linked to other relevant categories/dimensions and the relationship between different variables were established. Caste/ethnic groups, economic status and other socio-economic variables and location of villages were considered while analyzing and comparing data. Qualitative data was also used to complement and amplify the quantitative results of the survey.

Responses and information obtained from the survey have been quantified and specific codes have been given for each variable and each category of responses/information. The carefully coded data have been entered in SPSS 12.0 (statistical package for social sciences), a software for windows. Fever cases were categorised into different groups as perceived and reported by the respondents. Those fever cases from which blood samples and smears were collected and rapid test/microscopic examinations were done were grouped into malaria positive cases (who were identified by the optimal test and microscopic examinations) and negative cases (whose blood samples could not show the presence of parasites). Symptom recognition, action and experiences of fever cases as well malaria positive cases were labeled, coded, entered and analyzed. Respondents’ knowledge and perceptions about febrile illnesses and malaria obtained from the survey were coded and entered into the computer, and then analysed and integrated with the qualitative data on perceptions of the fever cases. Likewise, knowledge and perceptions of malaria prevention, preventive measures and their use were categorized, coded and entered into the computer. Simple descriptive statistics such as frequency, cross-tables, percentage of variables were computed and produced.

Caste and class frame was used to analyse and present data throughout the study. In the fourth chapter, description of socioeconomic profile of the study areas is based mainly on the information on total households and all family members obtained from baseline survey (census). In chapter five, all individual cases of fever and malaria obtained from fever survey were grouped into age, sex, caste and class and compared with the total reference population. Quantitative data on knowledge and perceptions about malaria and its prevention were analysed and presented using the sample
respondents and their caste, ethnic and class background. All individual cases of fever and malaria obtained from the sample households and group into different categories to generate cross-tabulations and to examine patterns of treatment seeking behaviour among the different groups of people. The number of cases changes while moving from the first treatment to second treatment and the third because all patients do not switch from one source to another in the same manner. Because of these, the number of sample cases in each groups does not remain same in all cross tables.

Population of the Dalits is low in both regions. Because of nature of our analytical framework at time, the number of specific households such as not so poor Dalits and well-off indigenous peoples became very small for statistical analysis. For those tables, care has been taken to interpret the results cautiously, specifically in tables where percentage was calculated. Despite the small number of respondents or malaria cases in caste and class tables, frequency was converted into the percentage to get simple idea about general pattern of knowledge and health behaviour and to compare these across different castes and classes. The combined caste and class tables were not used for statistical tests. However, some statistical analyses, for example, correlations to observe the relationship between variables and chi-square test to detect the significant difference among the variables, were carried out using SPSS programme in some cases where data was adequate and the statistical tests were essential.

**Limitations of the Study**

This study is carried out by a single person with little assistance; hence its coverage is bound to be limited. It is difficult to incorporate all the possible variables influencing the incidence of disease and the health behaviour of people regarding malaria in this study. The species, densities and bionomics of mosquitoes affect the malaria transmission in the community. The preventive/protective behaviour is mainly affected by density and biting behaviour of mosquitoes. But it was not possible to explore the entomological and biomedical dimensions of malaria problem in this study. Recent entomological studies are lacking in Nepal. Therefore, entomological dimensions of malaria and its impact on malaria transmission and people’s behaviour have not been discussed thoroughly.

This study has been focused on socio-cultural meaning of malaria and health behaviour for preventions and treatment of the disease among the people living in comparatively higher endemic areas. Therefore it could not speak for those areas where
endemicity is very low or where there are no health services altogether. In order to uncover people's actual behaviour and cultural practices that shape their malaria related behaviour, the researcher needs to spend long time in the study area by involving and interacting himself different events and activities. Because of time constraints, it was not possible for me to stay for longer duration in both study areas. Most of the behaviour and local cultural practices have been described on the basis of the reported behaviours, which were elicited during conversation and interviews and limited observations. However, possible attempts were made to minimize the biases and increase the validity of data by employing different techniques of data collection as mentioned earlier. Statistical analysis such as logistic regression would help us to predict behaviour of people by examining relationship between different variables, but the relationships between variables are not always linear, and statistical analyses alone are not sufficient to examine the behaviour of people in sociocultural and ecological contexts. Moreover, in small-scale study like this, such statistical analyses are not applicable. Therefore, we attempted to explore the relationships between different variables and the influence of various factors on heath behaviour of people by using only cross-tabulations and qualitative data.

**Ethical Clearance**

Research protocol (synopsis) of this study was approved by the Committee for Advanced Studies and Research of Social Sciences of Jawaharlal Nehru University, New Delhi. This was also reviewed and ethically approved by the Executive Board of Nepal Health Research Council, Kathmandu, Nepal.