INTRODUCTION

Despite decades of great efforts to control it, malaria still remains a serious public health problem in countries and territories of the tropical and sub-tropical regions, where 3.2 billions are at risk of malaria transmission. Each year, an estimated 350-500 million people are infected with malaria and about two millions die mainly due to *falciparum* malaria (WHO/RBM/UNICEF, 2005). In Africa alone, it kills more than one million people every year, of whom, most are children. About three million cases of malaria have been reported in South East Asia Region (WHO) each year. In 2003, India accounted for 61.82 percent of the total 2, 881,531 cases in this region, and more than 50 percent of deaths in the region were reported from Myanmar and 22 percent from India. In South Asia, the reported incidence rate of malaria is the lowest in Nepal (0.37/1000) in 2003 (Ibid). It is, however, estimated that about 50 percent of Nepal’s total population live in malaria risk areas and 24 percent in high-risk areas (EDCD, 2001 and 2004). The burden of malaria is unevenly distributed throughout the country due to the great variation in altitude and climate. The malaria problem in Nepal is seasonal, focal and unstable. People living in the forest fringe of the Terai and inner Terai and river valleys of the mid hill region are more likely to suffer from malaria than the people of other areas (Banerjee *et al*, 1991). Periodic focal outbreaks, the increasing trend of clinical/probable malaria, low blood examination rates and high slide positive rates in the past years indicate that the actual problem of malaria in Nepal continues to be high and that reported cases are just tip of the iceberg.

The problem of malaria has been getting worse throughout world since the global malaria eradication programme suffered a setback. The collapse of ongoing anti-malaria public health programmes consequently play an important role in resurgence (Sharma and Mehrotra, 1986). Administrative inadequacies such as lack of coordination, poor quality of leaderships at different levels, lack of proper supervision and training, and lack of ecological, epidemiological and entomological analyses were responsible for the resurgence of malaria in India (Dutta, 1993). The movement of non-immune people from the hills to the Terai, intensive deforestation, irrigation and development projects were responsible for local outbreaks of malaria in different areas of Nepal (Shrestha, 1985; Skerry *et al*., 1991). Government reports cited that technical, administrative, financial and logistic problems led to the resurgence of malaria in Nepal in the 1970s and 1980s. The major reasons for the resurgence of malaria may be associated with the
socio-economic and political situation rather than the often-cited scientific and technical reasons (Farid, 1980). Social issues and micro-ecological conditions fostering the spread of malaria were rarely taken into account. Moreover, ecological and sociocultural determinants of malaria were avoided in the conceptualization and implementation of the eradication programme. Since malaria was defined as an infection by a microorganism and transmitted by an anopheles mosquito, World Health Organization (WHO) and international agencies involved in malaria eradication/control deliberately excluded broader socio-economic and cultural issues in their malaria control programmes. Ignoring the social and economic determinants of malaria allows concerned health authorities to concentrate their efforts on mosquitoes and parasites not to be concerned with the thorny problem of poverty and inequalities in the distribution of land and other resources (Packard and Brown, 1997:187). Brown noted

"There has been little written about social factors in the modern resurgence of malaria. This is because the focus of public health, and malariology in particular, has narrowly fixed on the parasite and the mosquito vector. The bigger picture has been neglected- namely that increased rates of malaria morbidity, although directly influenced by changes in the parasites and vector, are caused by human behaviour. Those behaviours are both related to individual culturally coded patterns and larger-scale sociological phenomena including the political-economic level" (Brown, 1997:132).

What is true is that geographic and climatic conditions in tropical and sub-tropical regions make the local residents particularly susceptible to malaria, but it is not true that malaria is only a natural consequence of such environmental conditions. According to Inhorn and Brown, the immediate causation of infections/diseases are only the proximate causes of human suffering since ultimate causations are rooted in political and economic inequality (Inhorn and Brown, 1997: 54). Although climatic and biological factors are essential for transmission of infections, socioeconomic and cultural factors that impinge on human behaviours are equally crucial for the spread of infection (Heggenhougen, Hakcethal and Vivek, 2003). Human behaviours (sleeping habits, clothing styles), housing conditions, agricultural work and other economic activities determine their exposure to mosquito bites and susceptibility to infections. In addition, agricultural and infrastructural development, population movement, socioeconomic conditions and usage of control methods including health-seeking behaviour, which are also related to people's real life situation, influence malaria
transmission. Classical epidemiological triad of malaria may not be understood meaningfully unless it is put in broad socioeconomic and political contexts, and social sciences input is taken into account. Human hosts, one component of the triad and their behaviour are embedded in social, cultural, economic and political environment. Earlier such fundamental risk factors for groups were neither fully accepted nor addressed within the national malaria control policies. As a result, they continue to seriously impact the prevalence of the disease.

With the failure of technocentric vertical programmes and reemergence of infectious diseases, the relevance of social science researches in these areas have been realised. It is now widely accepted that an understanding of economic, socio-cultural and ecological factors, and the human responses to malaria and to programme for its control is crucial to the success of all efforts to control malaria (Oaks et al., 1991). Consequently, in recent decades, research on economic, social, cultural and behavioural factors of the affected communities have been increasing, generating substantial cross-disciplinary literature. There is enough literature to show that malaria and poverty are intimately connected. Poverty may promote malaria transmission; malaria may cause poverty by impending economic growth; or the causality may run in both direction (Sachs and Maleney, 2002:680). Increased socio-economic inequalities and poverty exacerbate the problem of malaria by forcing the people living in poor housing, sanitation and drainage with hunger and high density of mosquitoes as well as the lack of resources and health care to malaria treatment (Brown, 1997; WHO, 1999). Many studies have indicated that malaria is associated with poverty, occupational activities, socioeconomic and living conditions of people. Malaria is lately recognised as a disease of poverty in the tropics and sub-tropics (Worral, Basu and Hanson, 2005; Sachs and Maleney, 2002; Gallup and Sachs, 2001, Zurbrigg, 1992; Packard, 1984).

A review of social studies on malaria demonstrates that there are different explanatory models/ideas and concepts about the disease in different communities living in malaria endemic regions. These explanations range from individual risk factors to perceptions rooted in the supernatural and modern medicine concepts as well as the influence of services. The people in malaria endemic areas are aware of the symptoms, causation and treatment of malaria. However, local understanding of malaria does not exactly correspond to biomedical nosology. In many countries, severe malaria associated with convulsion are attributed to the belief of supernatural causes (Hasmann-
Muela, 2000; Achorlu et al., 1997, Winch et al. 1996, Mwenesi et al., 1995). In many areas of the world, where several treatments are available, patients ordinarily use multiple sources of health care in a course of febrile illness, whose choice is determined by numerous factors ranging from knowledge/perceptions to socioeconomic condition of the people and functioning of health services. Survey studies have mainly stressed on the relationships between health behaviour and individual characteristics such as age, sex, ethnicity, educational attainments, and specific knowledge about illness, beliefs, attitude. Anthropological studies have focused mainly on the role played by cognitive structure in behaviour and have ignored questions about the relationship between knowledge, ideology and social structure (Young, 1981b). There has been a lack of the similar studies regarding the impact of these factors on malaria prevalence and health behaviour of different ethnic/caste groups and classes in South Asia.

Studies have also shown the relevance of social, economic and ecological factors in people’s knowledge and their treatment-seeking and protective behaviour. These studies, however, primarily come from African countries. In South Asia, especially Nepal, has very little literature that explores these aspects. In Nepal, Malaria Eradication/Control Programme was initiated in 1959 without exploring the social and epidemiological situations in the country. Even after massive resurgence of malaria in the 1970s, no attempt was made by the concerned authority to explore the role of social, economic and ecological factors on the resurgence of the diseases. After four decades of implementation of malaria control programme, very little is known about local knowledge, belief and practices related to malaria (Sherchand et al., 1996b). Some socio-medical and anthropological studies of illness and health-seeking behaviour in Nepal highlighted that local residents have different ideas, beliefs and behaviours, which are associated with local culture, caste, ethnicity and access to the modern health services (Stone, 1977; Durkin-Longley, 1984; Justice, 1987; Subedi, 1989; Niraul, 1994; Beine, 2003). However, these are not related to the problem of malaria faced by Nepalese people. These aspects of the local epidemiology of malaria have neither been explored nor taken into consideration by the health planners. A study of a specific disease-related health behaviour of people in their social and ecological contexts is necessary for an accurate assessment of the epidemiology of the disease and tailor the disease control programme to a specific local situation (Dunn, 1985). Hence, an understanding of the local ecological, social, cultural, economic and services facets of
health behaviour regarding malaria in malaria endemic communities of Nepal is deemed necessary for improving existing malaria control programme by formulating alternative approach to traditional ones.

Illness perceptions are socioculturally constructed, and illness behaviour is a social as well as individual behaviour because an individual, family and other members are involved in the help-seeking process and economic and political forces, socially defined relationships and cultural meanings are reflected in the ways individuals responds to perceptions and experience of illness (Christakis, Ware and Kleinman, 1994:297). Health behaviour of people can be studied in the context of health culture of a community (Banerji, 1982; Sahu, 1991). The holistic concept of health culture provides a broad valuable framework that helps us to integrate various facets of illness and behaviour, and use various concepts and methods from different disciplines. It is time then to locate the disease specific health behaviour in a broad conceptual framework and use an interdisciplinary approach. Such an interdisciplinary study would be helpful to broaden our understanding of the disease and health behaviour of the people in the Hill and Terai regions of Nepal.

My concern with health behaviour arises out of my interest in health education regarding malaria control and prevention. The traditional approach of health education and communication is found to be ineffective in malaria control programme because it is mainly based on an one-way communication process. Such downstream educational efforts including the IEC materials and propaganda are found to be irrelevant, as they do not take into account local needs and perceptions (McKinlay, 2001). Health workers have not been prepared to conduct health education in their villages through the two-way verbal communication process to encourage people to change their harmful behaviour. Although individually targeted interventions may help some people change their behaviour, many individuals find it difficult to adopt healthful behaviour because their physical or socioeconomic environments impose many obstacles to engaging in these actions (Brown, 1991). Without a proper justification and understanding of social structural contexts, health education directed at persons with information about known risks could be a misdirected effort and a ‘victim blaming’ strategy (Kan, 1986). Gramiccia (1981) argues that health education in malaria control programme has failed because it has been conducted without paying attention to the learning process and without linking it to the local socioeconomic and ecological contexts and health services

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systems. Moreover, there is a lack of research on health behaviour and health education in relation to malaria control efforts (Dunn, 1979). It is obvious that it is not possible to conduct health education effectively without understanding the complexity of health behaviour in the socio-cultural, economic and ecological environment and health service systems. Therefore, an attempt has been made here to examine the socioeconomic, ecological and institutional determinants of health behaviour regarding malaria and link these with health education strategy of malaria control programme of Nepal.

This study also brings out regional the differences on health behaviour and their determinants. It would help in understanding the factors influencing health behaviour of the people in their local contexts. Our investigation would be useful in identifying those health behaviours, which can be changed by health education, those which can be improved by improving access to and quality of general health services, and those which require drastic changes in socio-economic and environmental conditions for malaria control in general and behavioural modification in particular. Such comprehensive information can be used to formulate an alternative malaria programme and design innovative model for health education that would attempt to address socioeconomic, cultural, ecological and political dimensions of the malaria problem. This would be a significant social science input in the malaria control programme of Nepal.

This thesis has been organized in ten chapters. Chapter One provides a description of the ecology of malaria, the global burden of malaria and international efforts on malaria control. It also describes historical trends of malaria problems and national malaria control programmes, regional pattern of malaria and issues in present malaria control activities. Chapter Two provides a review of literature regarding ecological and social dimensions of malaria like the role of socio-economic development, human ecology, population movement and socioeconomic factors in malaria transmission, and community understanding and perspective about malaria and their preventive and treatment seeking behaviour. In addition, theoretical and methodological issues in the study of illness perceptions and health behaviour have been discussed.

The third Chapter deals with the methodology of this study. It includes the conceptualization and research design, the covering area selection, sampling procedures and the methods/techniques that were used in data gathering, processing, and analysis. Health behaviour is conceptualized as a function of combined effects of individual
cognition, perceived/felt need and the contextual factors. Interdisciplinary methodology has been adopted to collect and analyse multiple sources of data.

Chapter Four provides the background information and the context of the study areas. Socioeconomic profile of the study villages such as the locations of villages, composition of populations, education, occupations, caste/ethnicity housing characteristic, landholding pattern, income, and economic status has been presented. This is followed by description of the epidemiological situation of malaria in the study villages based on the result of the survey and the socioeconomic factors contributing to malaria have been discussed in the two different ecological settings.

In the Sixth Chapter, I have presented community knowledge and perceptions of febrile illness and malaria using both quantitative and qualitative data collected from the field study. Knowledge and perception of malaria have been examined through caste and class framework. Chapter Seven provides detail descriptions of local health facilities, treatment alternatives and treatment seeking behaviour for malaria, and factors associated with treatment seeking behaviour. Caste, class and cultural variation in the pattern of treatment seeking behaviour have been discussed. Chapter Eight describes the popular understanding of mosquitoes, malaria prevention/control and their preventive/protective practices against mosquito bites and malaria. The role of socioeconomic condition, caste and class, burden of illness, density of mosquitoes, season and knowledge of malaria transmission and prevention on the uptake of preventive measures, mainly bednet use have been analysed.

In Chapter Nine, I have discussed the main findings and issues emerging out of these and have delineated the theoretical implication of the study for malaria control programme including health education and behaviour change. This chapter presents my understanding of the complexity of health behaviour of people in the study areas, which can help in proposing crucial recommendations for planner and programmers. These are based on the understanding that health education is a two-way process and requires a fuller understanding of the intricacies of social dynamics in which behaviours of different sections of population are rooted. It highlights the need to identify individual actions and local collective actions from large-scale level interactions to show that not all flaws lie with the people and that health education at best play some part in behaviour change. These recommendations are presented along with the summary in the last Chapter.