INTRODUCTION

1.1 Background

Roundworm, whipworm, hookworm and Stongyloides stercorlis are the four common soil transmitted helminths. They are major causes of morbidity in developing countries (1). Soil transmitted helminthiasis is a significant cause of mortality in an area where majority have poor knowledge of sanitary condition of the surroundings (2). Soil transmitted helminthic infections affect 25% of the world population. These are responsible for over million cases of disease per year world-wide (3). World-wide, approximately one in every four is affected by one of these major infections (4). These infections often occur in combination with each other (3). Roundworm and hookworm are the major health concerns in both the tropical and temperate areas of the world (1).

These soil transmitted helminthic infections are also endemic in Nepal (3). Due to low socio-economic status and poor hygienic condition of the people, intestinal parasite infections are most common (5). These parasitic infections are major public health concern of the country (6). High percentage of prevalence of soil transmitted infections in the country causes decreased work capacity and productivity of the children and adults. The individuals suffer from malnutrition and infections supporting the poverty (17).

Severe roundworm infections cause serious morbidity and mortality due to intestinal blockage and the impact of the infections on community is not well-understood (7). Chronic Ascariasis has been implicated in the development and persistence of malnutrition in children (8). Hookworm infection is generally as one of the more serious of helminthic infections because of its debilitating association with anaemia due to blood loss from the intestines (10).

The most common of the mode of spread of roundworm from the contamination of food item e.g. vegetable, fruits and meal etc. Hookworm transmitted through penetration of the
skin when people work with their bare feet. Farmers who spend most of the time in agriculture field on bare feet will be infected severely. Hence the study of the soil-transmitted parasites are felt to be essential (9).

Nepal is an agrarian country and about 90% of the total population are residing in rural areas. Helminthiasis among the people residing in the rural areas of the country is higher. And infestation is mainly caused due to low socio-economic status, poor hygienic condition and ignorance (16). Inadequate sanitary condition, low socio-economic status, poor personal hygiene have created potential health risk for rural people in Nepal. Diseases recorded in hospital, Primary Health Centre, Health Post and Sub health Post and other health institutions, so that there is a high proportion of morbidity due to helminthiasis in rural people. World Bank (1990) reported that 7% of the population in Nepal are in absolute poverty. In this country, 34% rural people in comparison to urban (79%) are accessing to safe drinking water and only 3% rural people have seen with excreta disposal facilities (17). The literacy rates for male and female are 54 and 33 percent respectively.

1.2 Statement of the Problem

In Nepal among 10 leading diseases, worm infestation ranks in third position (23). Nepal has high prevalence of soil transmitted helminthic infections affecting all ethnic groups, all age groups, both sexes, children, pregnant and lactating mothers (17). Soil transmitted helminthiasis is endemic disease in this country (14). High prevalence of soil transmitted helminthiasis needs avenues in controlling on the basis of health centres-information, the Department of Health Service, Ministry of Health, HMG/Nepal has annually reported that the high prevalence of parasitic infections has been in central region and in hilly areas (23).

In Nepal, open defecation is quite common particularly in rural areas that impose risk of all helminthic parasite disease. The ova present in the stool are dispersed everywhere
by means of air and water (25). Low sauce- economic, poor health education and insufficient sanitation have resulted high incidence of parasite infection in the country at present (14).

Nepal is a signatory of primary health care for prevention and control of locally endemic diseases, and education concerning the prevailing health problems of the methods of preventing them and controlling them (18, 19). Prevalence rate of the soil-transmitted helminths should be detected and treated in the communities under the primary health care approach. Most important of all is to educate affected individuals to solve the problem through safe drinking water to all, sanitary latrine to all, shoes on every one’s feet is one step toward Health For All by 2000 AD (11).

There are lacking of information about the prevalence and the affecting factors of the soil transmitted helminthiasis in many hilly and rural communities for the proper planning, programming and managing through the primary health care at the community level to solve the problems created by the helminthiasis.

1.3 Rationale

Intestinal parasitic infections are widespread and is considered a leading cause for considerable morbidity. Although morbidity rate from such infections is low, some intestinal parasitic infections interfere the nutrition, growth and development of children as well as affect the work and productivity of adults. Moreover, nation should allow more budget in order to cure the infected people thus require more investment. Individual should also take care to manage more financial resources to get easy relief from such helminthic infestation. Hence, it such infestation could be made control substantial social benefit can be derived. Furthermore, there is evidence that the control of ascariasis, which gives measurable results is a good entry point for initiating other health programs, encouraging community cooperation and promoting intersectoral collaboration.
International parasitic infections represent large and serious health problems in developing countries. Physician and public health authorities do not show keen interest to control them. Due to this attitude, probably the high rate of prevalence and difficulties experienced previously in attempting to eradication or control of helminthic parasite (WHO 1981) (28).

Most of the studies undertaken so far have dealt with traditional social determinants such as age or sex, a few includes density of population and occupational and ethical factors. The social units examined were families mostly with rural versus urban dwellers and poor versus rich social classes. (WHO 1981) (28).

Nepal is an agricultural country with 90% population living in rural settings. The country has 37% people having accessed to safe drinking water along with only 6% people with safe excreta disposal system (17). The literacy rates for male and female are 54% and 25% respectively (24). The diseases caused by soil transmitted parasites have been one of the most wide spread diseases in Nepal. Parasite control is a major public health issue (26). The socio-economic implication of the diseases is simply immense. It has been a major cause of malnutrition. There are evidences on the positive relationship between parasite diseases and night blindness and xerophthalmia lead to blindness. But the people are not aware of the seriousness of the diseases and treatment along with the behaviours against soil transmitted parasites in the rural communities’ (25).

Principally soil-transmitted helminthiasis is preventable disease. But, the prevalence of the soil transmitted HELMINTHIASIS is not expectedly declined. So, the high prevalence of the intestinal parasites might be indication of human behaviour - walking bare foot, poor sanitation and low socio-economic status, illiteracy and lack of awareness (25).

Soil transmitted helminthiasis has become the major public health problem in the central region and hilly parts where the limited care is (23), and it is causing decreased work capacity and productivity of the individuals through malnutrition and infections in a
vicious cycle (17). Soil transmitted helminthiasis is a challenging problem to the community health for which the primary health care is committed for to overcome (25).

However, low socio-economic, poor health education and insufficient sanitation have also been seen in many remaining parts of the study district lacking of information about the prevalence of soil transmitted helminthiasis. In primary health care for which Nepal is a signatory, provision of safe water supply and basic sanitation is one of the essential element of primary health care needed in the communities.

Policy makers, planners and managers and community people expected to know about prevalence and factors affecting the locally endemic diseases like soil transmitted helminthiasis in controlling and treating in the communities and in the nation (25).

In Kavrepalanchowk district, worm infestation is second leading disease according to the DPHO-record, 1996/97. So, the study of the parasitic infections especially soil transmitted helminthiasis in hilly rural areas of this district in the central development region of Nepal is crucial (17). And, the researcher has intended to study on soil transmitted helminthiasis in the hilly rural area of this district, where none of the studies has yet been carried out.

1.4 Research questions

Following research questions guided this study:

1. What is the prevalence of the soil transmitted Helminthiasis in a rural area of Kavrepalanchowk district of Central Region of Nepal?

2. Is there any association between the knowledge about the helminthiasis and the infestation of the soil transmitted helminthiasis?

3. Is there any association between human behaviour, socio-economic status and the infestation of the soil-transmitted helminthiasis?
1.5 Conceptual Framework

1.6 Study District

In order to carry out the present study, Kavrepalanchowk district was selected purposively. It is one of the districts lying in the mid-hills of Nepal. Administratively it belongs to Bagmati zone of Central Region. It lies between 27°15' - 27°45' North latitude and 85°20' - 85°55' East longitudes. It is surrounded by eight different districts. They are Dolkha and Ramechhap in eastern part, Bhaktapur and Lalitpur in western side, Makawanpur and Sindhuli in southern range, Sindhupalchowk and Kathmandu in northern direction. Due to rugged and fragile topography, transportation facility is poor which leads to make poor health services though it is lying nearby the nation's capital. Most of the rural parts of the district are under developed in view of health services and other facilities except in three municipalities i.e. Banepa, Panauti and Dhulikhel. These municipalities are the main urban areas and are attraction of people of the districts and are seen able more or less serve health facilities to the people of the district.
At present, the district host 3,74,956 population. Among them there are … males and ….. females. The average household and household size is 56,633 and 5.7 respectively. Administratively, the district has seen divided into three constituencies in order to represent in the Lower House of the parliament, after the restoration of democracy in 1990. There are altogether 87 VDCs. As in other VDC of the country as a whole, each VDC contains 9 wards. Dhulikhel is the district headquarter where all the administration units are concentrated.

Most of the people of the district are dependent on agriculture as their main occupation. The literacy rate is much lower among women than men. Poverty and ignorance are the main social problem. The district is flourished with diverse ethnic groups. The dominant ethnic groups are Tamang, Brahmin and Chhetri. The people are getting health services through its established 10 health post (HP) and 81 sub-health posts (SHP) as health-network of the government. The number of existing primary health centers is 3 in the district. There are about 60 health institutions in total including government and non-government. There is only one health institution for 5750 population. The people are getting health services through MCH and TBA as their numbers are 837 and 338 respectively.

1.6.1 Study Area

Ugratara-Janagal VDC was selected for the study. The total population of the VDC is 4756 in which male and female occupy 2329 and 2427 respectively. The diverse ethnic groups reside in this VDC. Among them Brahmin, Chhetri, Baishya and Sudra are noted during the field study as 18.8, 53.43, 20.88 and 6.8 percent respectively. Chhetri seems as the dominant ethnic group of the VDC. The people are of Hindu and Buddhist religion. However, the religious harmony is well maintained, as in other parts of the country. There is no any communal feeling among the people of different origin.
The people of the VDC are involved in agriculture as their main occupation. Most of the productive age male population were found to get more earn during their off-farm period as labor in Kathmandu or in nearby urban centres eg. Dhulikhel and Banepa. People dialect with each other through national language Nepali. The 4 wards (No. 2,3,7 and 9) were taken for this study. The total study population is 1,523. Rice, maize, millet and wheat are major food crops. Potato, orange and oil seeds are the main cash crops.

The VDC is surrounded by Banepa municipality from eastern side, in northern side, Ugrachandi Nala and Tukucha Nala are located, the southern part is connected with Panauti municipality as well as with Mahendra Jyoti VDC. Similarly, the western side of VDC links the Sanga VDC. The hygiene and sanitation is very poor. The open field defecation is well practiced in all over the VDC.

### Table 1.1: Leading causes of morbidity in 2053 BS

<table>
<thead>
<tr>
<th>SN</th>
<th>Disease</th>
<th>Percentage</th>
<th>Morbid population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Skin</td>
<td>30</td>
<td>876643</td>
</tr>
<tr>
<td>2</td>
<td>Worms (Ascaris and others)</td>
<td>15</td>
<td>432304</td>
</tr>
<tr>
<td>3</td>
<td>Diarrhoea</td>
<td>13</td>
<td>366654</td>
</tr>
<tr>
<td>4</td>
<td>ARI</td>
<td>10</td>
<td>298954</td>
</tr>
<tr>
<td>5</td>
<td>Gastritis</td>
<td>7</td>
<td>203229</td>
</tr>
<tr>
<td>6</td>
<td>Headache</td>
<td>6</td>
<td>187951</td>
</tr>
<tr>
<td>7</td>
<td>Non-diagnosed fever</td>
<td>6</td>
<td>171486</td>
</tr>
<tr>
<td>8</td>
<td>Cough chest pain</td>
<td>5</td>
<td>159670</td>
</tr>
</tbody>
</table>

Source: Health Information Bulletin 1995