DISCUSSION

Roundworm, hookworm, Strongyloides stercorlis are the common soil transmitted helminths. They are major cause of morbidity in developing countries including Nepal. STH has been a major public health concern in Nepal.

The prevalence of STH infestation in Janagal VDC of Kavre district of Nepal was found to be 65 percent. This rate is much higher than that estimated for the world population, which is 25 percent. According to the District Health Office records (1996-97), worm infestation is the second leading disease in the community. High prevalence of STH may cause decreased work efficiency and productivity, and therefore, an immediate intervention seems to be an urgent need. Although deworming was done at the time of the study after laboratory investigations, the researcher strongly feels that an impact study needs to be carried out to see if simple intervention like deworming is effective enough to fight against STH infections.

More than half (53%) of those infested with STH were individuals less than 20 years of age, and half of the number belonged to children under 10 years of age. Intestinal parasites are very common among children and when infection occurs in them, all the family members suffer from the disease. There are several reasons why children get this infestation so commonly. Most of them in the villages like this study area do not wear shoes, not even during defecation. Open-air defecation has aggravated the situation further. A large number of children also have developed a habit of playing with dust. The children who are able to walk are customarily allowed to go around without using shoes and their defecation is not controlled. Most of them do not have toilet facility. Thus a health education endeavour is needed to lower the current prevalence of the disease.

Nearly half (45.7%) individuals were suffering from roundworm infestation, followed by hookworm (31.1%) and *Trichuris trichiura* (14.3%). Similar studies done in the USA (1987) had identified hookworm, Ascaris and *Trichuris trichiura* as the commonest
parasites. What they had concluded then seems to be equally meaningful now: "That intestinal parasitism should not be overlooked as a cause of illness, otherwise prevalence of parasite may be increasing" (28).

The severity of the STH infection was higher in female (54.7%) than males (45.3%). One of the important reasons for this may perhaps be that females are more exposed to parasites as they often wash the fecal of children with bare hand and leave their hands unwashed (do not wash it with soap and water). Working with bare feet in the kitchen garden could be another reason. However, studies in other parts of the world have found that male are usually more heavily parasitized than the female (Yanagisawa, 1966).

Agriculture was the occupation of almost all of the study population. Of those having STH infestation, 87.3% had agriculture as their main occupation. Although the number of non-agriculture occupation was very few, and it may not be appropriate to conclude that agriculture was a factor affecting the prevalence of STH, it has, however, a potential justification. Agricultural activities in Nepal carry a lot of exposures to the parasites, as people do not wear shoes while working in the field. As these people usually have low income level, and thus do not afford to have toilet facility, they usually defecate in the open field, normally near to their working place.

Education also had some remarkable effects on the prevalence of the disease. While about 80 percent of the illiterate individuals had STH infection, only 25 per cent of those having higher education were detected as having infested with the disease. This clearly indicates that by educating people we can lower the prevalence of STH infestation to a large extent, other benefits of the education remains undebated. About 70 percent individuals who had primary education were found to have infested with STH, a large number of them are obviously the children.

Knowledge about the means of transmission of the parasites to humans and portal of entry are of great importance in understanding the biology of parasites. Moreover, it is equally important from the stand point of preventive medicine (Rukmono, 1980).
The knowledge of the study population on mode of transmission of the parasites and attitude towards the disease was also assessed. While all the households with 'no knowledge' were detected as having infested with STH, nearly 20 percent of the households with 'good knowledge' did not have any STH infestation. Those who had knowledge knew that they could prevent the disease simply by wearing shoes, washing hands before meals, and seeking help from the health institutions. What is very interesting to see is that nearly half of the population had an incorrect knowledge about STH infestation. They believed (or knew) that eating sugar in a large quantity results in worm infestation. On further inquiry, it was found that they acquired this knowledge through their ancestors. This was the conventional belief with strong roots, and the researcher feels that it must be corrected as earlier as possible.

Sanitary behaviour also affected the prevalence of the disease. About 25 percent of those who defecated in open field were found to have the infection. Another estimate revealed that almost all (96%) households classified as having 'bad' sanitation were detected to have the infestation. Only about 60 percent households had latrine and of those with positive STH cases 58.8 percent had the latrine in the kitchen garden, very near to their house. Ensuring good sanitation in the villages remains to be a difficult task, partly because they do not know the importance of keeping clean, and mostly because they do not afford even minimal level of sanitation facilities like having a hygienic toilet. Thus, it is not surprising to see more prevalence of the disease in those households, which have not good sanitation.

Thus, above prevalence rates of STH infestation in Janagal VDC in Kavre district are considered excessively high. Although the District Health Office estimates it to be the second leading cause of morbidity, appropriate interventions need to be implemented to lower the prevalence rate.

CHAPTER VII
CONCLUSION AND RECOMMENDATION

7.1 Summary and Conclusion

The prevalence of STH infestation in Janagal VDC of Kavre district of Nepal was found to be 65 percent. This rate is much higher than that estimated for the world population, which is 25 percent. While roundworm infestation was found to be the largest in magnitude (45.7%), followed by hookworm (31.1%), 4 cases of Strongyloides stercoralis (1.1%) and 14.3% *Trichuris trichiura* infestations were also detected. Individuals below 20 years of age were the most affected age group (53%), and male (45.3%) were found less infected than female (54.7%). People with agriculture as their main occupation were more infected (68.2%). Of the total illiterate population, 79.3% had STH infestation, and the least affected group was that of the individuals having higher education (25%). About 13% of the households with 'enough' income were detected as having no case of STH. Knowledge of STH was also identified as a contributory factor. All (100%) of the households classified as having 'no knowledge' had STH infection while 81.5% of those with 'good knowledge' had it. Sanitary behaviour also influenced the prevalence of the disease. About 96% households classified as having 'bad' sanitation had STH infestation. However, only a marginal difference was found in case of personal hygiene behaviour.

In view of above, it is concluded that the prevalence of soil transmitted helminthiasis is much higher in the communities of Janagal VDC. Socio-economic variables like age, sex, occupation and income are some of the factors identified as factors affecting the prevalence of STH infestation. Likewise behavioural factors like household sanitation is also identified as the factor affecting the prevalence of the disease. Importantly, knowledge of the infestation has been identified as one of the prime factors that affects the prevalence of STH in the study area.

7.2 Recommendations
Based on the findings of the study and subsequent discussions, the following recommendations are made:

7.2.1 Health education to the villagers

It is very important to impart knowledge of STH infestation to the villagers, most of who have been found not wearing shoes while working in the fields and defecating in open fields, thus reaming highly exposed to the parasites. They should be made aware that eating sugar in a large quantity has nothing to with the STH infestation, but their sanitation and personal hygiene behaviours are more important to watch out.

7.2.2 Regular laboratory examinations of the stool and deworming

The prevalence of the disease has been found much higher. It is, therefore, recommended that the District Health Office make a provision to collect stool samples from the villages in a regular basis and examine them to detect the presence of STH. After the laboratory outcomes, necessary deworming need to be carried out.

7.2.3 Government subsidies to construct toilets

The villagers should be encouraged to construct toilets, and in case they can not afford, government subsidies are to be provided to the villagers. Many non-governmental organizations working in this area may help in this initiative.

7.2.4 Need of impact study and further research

Impact study of interventions including deworming needs to be carried out to compare the effectiveness of the program and also to be vigilant over the prevalence of the infestation.
References


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