

## CHAPTER 8

### CONCLUSION

This study has attempted to measure the economic impact of Schistosomiasis morbidity imposed on households in an endemic area. The analytical model presented, focuses on the rural micro level, in a community whereby Schistosomiasis is perceived as the high ranked health problem.

The first thing to note is that, the model in this study tries to address the economic impact of Schistosomiasis morbidity in endemic area by focusing on household labour productivity and school performance of children. Productivity loss on households is revealed from individual household member's point of view and then aggregated to reflect household productivity. However, the changing health status of household members depicts differences in productivity loss.

For the case of school performance, it has been analyzed considering class attendance as well as class grades. School children questionnaire was used to identify whether school absenteeism and class grades were associated with Schistosomiasis.

Secondly, is the courtesy of the intensity of infection among household members. To embody this element in the analysis, this thesis codifies each household member being faced with three health status. The health status circle debut when a member is healthy, shifts to infection and lastly to morbidity stage. When household members are healthy, they do possess higher productivity weight compared to the stage when they are infected or have developed morbidity symptoms.

This way of analysis suggests that, it is not necessarily true that all people infected with Schistosomiasis will have the same productivity loss.

The results from this thesis shows that, if the differences in infection intensity among household members is taken into account labour productivity loss is depicted to be different depending on the age and the current health status of a household member.

However, the extent of productivity loss is manifested to be greater when a household members develops morbidity symptoms whereby are compelled to abdicate economic activities, thus losing one day labour productivity. Labour productivity loss during the infection stage seems to be not much lower as it has been expected, probably due to the reason that, household members manages to perform their economic activities.

On the other hand, these differences in labour productivities which has been revealed by the labour productivity index, have tested statistically significant by the F test using a two way analysis of variance (ANOVA). This statistical test implies that, the decrease of labour productivity among household members might have been caused by Schistosomiasis in this endemic area. However, it is accepted that, due to some confounders and limitations encountered in the study, these findings might have been influenced to such conclusion.

For the case of school performance analysis, the constructed school performance index has been applied to analyze hypothetical data collected from two sample proportions. In testing the differences of the two samples, statistical Z was applied and the results showed that, computed Z is greater than critical value of Z. The null hypothesis is rejected which means that the two sample results are statistically different with proportion  $p_1$  being greater than proportion  $p_2$ . Thus, by using hypothetical data, the rejection of null hypothesis suggests that there is some evidence to support the argument that poor school performance in Schisto endemic area may be is due to the presence of Schisto.

However, other counfounders such as differences in mental ability, teaching materials and availability of good teachers might have influenced the results in these two areas. On the other hand, if the results would have lead to accept the null hypothesis, this means that there is no differences in school performance between the two samples. This implies that there is no enough evidence to justify that the poor school performance of school children, in Schisto endemic area is due to the presence of Schisto.

Economic cost equations developed in this thesis, reveals the resources households spend so as to cope with the Schistosomiasis problem. Direct cost equation shows that households in endemic area spend substantial

resources for treatment of Schisto due to the availability of effective and safe drug (praziquantel). Moreover, this cost is anticipated to be much higher due to the common feature of the disease, that of reinfection. On the side of indirect cost, the equations explores the hidden costs of the disease such as output loss during the time of seeking treatment and reduced labour productivity due to infection. Thus, if all these costs are aggregated schistosomiasis imposes higher economic costs on households living in endemic area.

However, this explored economic impact of schisto suggests an introduction of control programme.

### **8.1 DISCUSSION**

Using methodological approach to investigate the economic impact of Schistosomiasis morbidity in endemic area, this paper has succeeded to meet its three specific objectives which are:(1)To model how Schistosomiasis morbidity in endemic area affect labour productivity on households.(2)To model how Schistosomiasis morbidity in endemic area affect school performance.(3)To model how direct and indirect costs of Schistosomiasis morbidity can be determined.

This has been done through the development of labour productivity index, school performance index and cost equations. These economic tools, have been applied to analyze the economic impact of this parasitic disease reflecting the burden to the community.

On the other hand, even if all the study specific objectives have been met, it is acceptable that, the approach in the analysis might have its strengths and weaknesses. However, whatever the weakness may be it is believed that strengths outweighs weaknesses. This is due to the fact that, the study has been carried out following economic principles as well as epidemiological ethics of the disease.

Moreover, it has been learnt that large part of endemic world which suffers from helminth diseases, official control programmes do not exist. Lymphatic filariasis is uncontrolled in most of East Africa and much of rural India. Also Schistosomiasis remains unchecked in most of Sub Saharan Africa. One of the reasons has been associated with the failure of the economic research to demonstrate the economic importance of introducing control programmes.

On the other hand, an absence of control programme implies either that the diseases are not perceived by health planners to be of high priority compared with other health issues or that control is not affordable. The limited resources available for health care in developing countries requires the involvement of cost analysis in health policy planning.

## **8.2 INTRODUCTION OF CONTROL PROGRAMME**

Assessing the cost of the disease in terms of health impact, productivity losses and health services demand can permit external comparison of the economic impact of Schistosomiasis, relative to other health and development concerns.

However, priorities for health care can not be guided purely by estimates of the economic or health impact of the disease. It is also necessary to know the costs of implementing control programme and the benefits likely to accrue. Since there is lack of consensus as to the most appropriate Schistosomiasis control measures, attempts at inter sectoral comparison will remain controversial until this issue is resolved.

One of the newest tools available for economic appraisal of health care programmes is cost effectiveness analysis (CEA). This is the method that enables health researchers to determine the cheapest strategy of controlling the disease so as to meet a defined health target or optimal strategy to meet an objective given available resource constraint.

Chemotherapy is the currently preferred option for the control of Schistosomiasis species due to the availability of safe and effective cure drug. Also, the rising environmental concerns and high costs of molluscicides have tended to reduce the emphasis on vector control. Similarly, the high capital investment required to provide clean water supplies and sanitation facilities are generally considered as being beyond the financial possibilities of Schistosomiasis control programme.

Guyatt and others (1994) have attempted to apply the cost effectiveness analysis tool so as to identify the most cost effective strategy for Schistosomiasis control, bearing in mind the explored economic impact of the disease. In their paper, these authors focused on the

two forms of chemotherapy all aimed at morbidity reduction. The first involves targeting treatment at high risk groups such as school children and the second involves integrating chemotherapy into the day to day activities of the primary health care system.

The control alternatives suggested in this paper are: (i) Mass treatment by a mobile team (MMT) which involves the annual mass treatment of all primary school children by a mobile team comprising of one driver, one field worker, and one rural medical aid. (ii) Reagent strip testing by school teachers (RST). In this control alternative, teachers annually screen children with Sanguar reagent strips and refer all positives to the nearest dispensary for treatment. One teacher per school attends a workshop for training in reagent strips testing, where they also receive health education and materials required for screening their schools. (iii) Passive testing and treatment at the dispensary (PTT) Control is provided by passive case detecting using urine sedimentation and subsequent treatment of positives with a single oral dose of praziquantel (40mg/kg). This requires the provision of trained staff and equipment for screening and treatment at all dispensaries.

However, the cost effectiveness analysis of the three alternatives for introducing a control programme showed that, cost per infected person treated was US\$ 4.5 for mass treatment by a mobile team (MMT), US\$ 3.82 for reagent strip testing by teachers (RST) and US\$ 1.87 for passive testing and treatment at dispensaries (PTT). Thus, the cost effectiveness alternative was identified as PTT.

Although the study has focused on *Schistosoma haematobium*, authors are convinced that the analysis do apply even for other Schistosome species. In a nut shell, the estimation of the economic impact of Schistosomiasis lays a foundation for future research on the identification of feasible and affordable control programmes bearing in mind that, most of the developing countries endemic with Schistosomiasis faces resources scarcity.

### **8.3 FINANCING OF THE CONTROL PROGRAMME**

When economic impact of Schistosomiasis has been revealed, and suggestions for an appropriate cost effective control method has been done, the task ahead is the question of financing the identified control programme. Given the resource constraint faced by

Tanzania the government can not afford to finance the programme for ever, instead community financing participation is inevitable in order to ensure future sustainability of the control programme. Community financing has been proposed widely to be the most reliable source of financing control programmes, given the fact that people in endemic areas perceives the disease as a hindrance for their economic development.

On the other hand, individual households often spends substantial private funds on health, especially in endemic areas. Private spending on health care in third world countries is quite high as a percentage of income and may in fact account for two third or more of total health expenditures, Golladay and Liese (1980). Also, community financing gives the community the right to ensure that, services are acceptable and respond to the priorities as judged by the community and this will ultimately increase utilization.

#### **8.4 LIMITATION OF THE STUDY**

Probably the most limitation in this thesis stems from the fact that, it has been impossible to carry out laboratory examination so as to determine the intensity of infection among household members. Instead, categorization of health status of members into three categories has been used to address this issue, as members with current infection (untreated) are assumed to possess light infection whereas those with chronic symptoms (morbidity) are treated as having heavy infection.

Secondly, the assessment of economic impact of Schistosomiasis morbidity might have been influenced by other diseases, despite of the fact that questionnaires were used to sort respondents. The most suspected diseases are helminth diseases.