

ECONOMIC IMPACT OF SCHISTOSOMIASIS MORBIDITY  
ON HOUSEHOLDS IN ENDEMIC AREA OF LAKE VICTORIA  
IN TANZANIA



Mr.Nassor Said Kikumbih

A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Science

Department of Economics

Graduate School

Chulalongkorn University

1996

ISBN 974 - 634- 002 - 6

Thesis Title : ECONOMIC IMPACT OF SCHISTOSOMIASIS  
MORBIDITY ON HOUSEHOLDS IN ENDEMIC  
AREA OF LAKE VICTORIA IN TANZANIA.

Graduate : Nassor Said Kikumbih

Department : Economics

Advisor : Asst. Prof. Dr. Sothitorn Mallikamas

CO-advisor : Asst. Prof. Dr. Siripen Supakankunti

---

Accepted by the Graduate School, Chulalongkorn University  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Health Economics.

*Santi Thoongsuwan*  
.....  
(Assoc.Prof.Dr.SantiThoongsuwan) Dean of  
Graduate  
school

Thesis committee:

*Wattana S. Janjaroen*  
..... Chairperson  
(Assoc.Prof. Dr.Wattana S.Janjaroen)

*Sothitorn Mallikamas*  
..... Thesis advisor  
(Asst.Prof.Dr.Sothitorn Mallikamas)

*Siripen*  
..... Thesis Co advisor  
(Asst. Prof.Dr. Siripen Supakankunti)

*Paitoon Kaipornsak*  
..... Member  
(Dr. Paitoon Kaipornsak)

## C860547 : MAJOR HEALTH ECONOMICS

KEY WORD: ECONOMIC IMPACT / SCHISTOSOMIASIS / TANZANIA.

NASSOR SAID KIKUMBIH : ECONOMIC IMPACT OF SCHISTOSOMIASIS MORBIDITY ON HOUSEHOLDS IN ENDEMIC AREA OF LAKE VICTORIA IN TANZANIA.

THESIS ADVISOR : ASST. PROF. DR. SOTHITORN MALLIKAMAS, Ph.D,

THESIS CO-ADVISOR : ASST. PROF. DR. SIRIPEN SUPAKANKUNTI, Ph.D,  
68 pp. ISBN 974-634-002-6

Tanzania like many developing countries endemic in Schistosomiasis, has no official control programme due to resource constraint. In this study, economic impact of this parasitic disease has been analyzed focusing on the economic costs, current productivity loss, and future productivity loss.

It is revealed that, economic costs associated with this disease in endemic area is bigger, especially when consideration is made to explore the hidden opportunity costs such as output loss during the time of seeking treatment as well as reduced labour productivity as a result of infection. Both direct cost and indirect cost equations shows the magnitude of the economic cost borne by households in endemic area. On the other hand, current productivity loss is analyzed by using a developed labour productivity index.

Future productivity loss is revealed indirectly through the poor school performance of school children, who are identified by the constructed school performance index. Thus, poor school performance denies children from increased productivity in future through an increase in their skills.

However, these results holds for the given assumptions underlying the study. This means that, the explored impact might have not been revealed if real data were utilized, hence implying weakness in the analytical tools.

Thus, based on the developed analytical tools of this study, the introduction of Schistosomiasis control programme in endemic area is inevitable.

ภาควิชา..... Economics

สาขาวิชา..... Health Economics

ปีการศึกษา..... 1995

ลายมือชื่อนิติศ..... *Ami*

ลายมือชื่ออาจารย์ที่ปรึกษา..... *Sothitorn Mallikamas*

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม..... *Siripen*

## ACKNOWLEDGEMENT

First of all I would like to express my sincere appreciation to my thesis advisor Asst. Prof.Dr. Sothitorn Mallikamas and Co-advisor Asst. Prof.Dr. Siripen Supakankunti for their unstintingly guidance, whole hearted co operation and treasurable time devoted to improve my thesis.

My thanks must go to Assoc. Prof. Dr. Wattana S.Janjaroen and Dr. Paitoon Kaipornsak who were both in the examination committee of my thesis proposal and thesis examination. Their prolific guidance are important for me to accomplish this work. Also, I'm indebted to the Centre Director Asst. Prof. Dr. Kaemthong Indaratna for her kindness and efforts made to enable me attend this course.

I wish to extend my thanks also to all lecturers of Centre for health economics: Prof. Dr.Pirom Kamolratanakul, Assoc. Prof. Manisri Puntulatp, Assoc. Prof. Waranya Patarasuk, Asst. Prof. Dr. Isra Sarntisart and Assist. Prof. Dr. Pongsa Pornchaiwiseskul and Dr Chev Kidson. It is them who imparted me with health economics tools to work on my future career. Also, thanks to the Centres' office assistants Ms.Chotima Sukapurana and Ms. Patchanee Rodsumpaew for their kindness and co operation given to me.

Special thanks goes to the UNDP/World Bank/WHO special programme for training and Research in Tropical Diseases(TDR)which supported my one year fellowship to study and live in Thailand. Last, but not least, thanks to my parents, and the Director General of National Institute for Medical Research, Tanzania who supported me in various ways to attend this course.

Mr. Nassor Said Kikumbih

May 1996.

## CONTENTS

	Page
Abstract.....	ii
Acknowledgements.....	iii
Contents.....	iv
List of Tables.....	vi
List of Figures.....	vii
 Chapters	
1. Introduction.....	1
1.1 Background.....	1
1.2 Rationale.....	2
1.3 Research Questions.....	5
1.4 Research Objectives.....	6
2. Literature review of previous works.....	7
2.1 Economic cost.....	7
2.2 School performance.....	7
2.3 Labour productivity.....	8
3. Research methodology.....	11
3.1 Study design.....	11
3.2 Theoretical design.....	11
3.3 Empirical design.....	12
3.4 Operation definitions.....	15
3.5 Conceptual framework.....	17
3.6 Definition of model variables.....	18
4. Economic loss concept.....	21
4.1 Education investment loss.....	21
4.2 Net present Value (NPV) approach .....	22
4.3 Lost future productivity.....	22
4.4 Cost classification.....	23
4.5 Cost identification and measurement.....	23
4.6 Cost equations.....	25
5. Labour productivity measurement.....	29
5.1 productivity Concepts.....	29
5.2 Conversion of productivity units in monetary term.....	31
5.3 Estimation of household members productivity...	32
5.4 Definition of the disease impact.....	33
5.5 Labour productivity Index.....	33
5.6 Development of labour productivity index.....	34

6. School performance measurement.....	37
6.1 Definition.....	37
6.2 School performance Indicators.....	37
6.3 Rationale for adopting school performance index	38
6.4 Evaluation of school performance index.....	39
7. Hypotheses testing.....	41
7.1 Effects of Schistosomiasis on labour productivity.....	41
7.2 Effects of Schistosomiasis on school performance.....	45
8. Conclusion.....	48
8.1 Discussion.....	50
8.2 Introduction of control programme.....	51
8.3 Financing of the control programme.....	52
8.4 Limitations of the study.....	53
References:.....	54
Appendixes:.....	58
Appendix I Household Questionnaire .....	58
Appendix II School children Questionnaire.....	65
Curriculum Vitae.....	68

**LIST OF TABLES**

Table	Page
2.1 List of Previous works.....	9
3.1 Summary of Steps in Analyzing Economic Impact ....	20
5.1 Designed Productivity Index Table.....	34
5.2 Hypothetical Household Data.....	34
5.3 Computed Productivity Index Table.....	36
6.1 School Performance Index.....	38
7.1 Statistical Test for Labour Productivity.....	42
7.2 Analysis of Variance for Labor Productivity.....	44

**LIST OF FIGURES**

Figure	Page
3.1 Analytical Model for the Study.....	17