

**A STUDY ON FACTORS CONTRIBUTING TO THE HIGH
PREVALENCE OF URINARY SCHISTOSOMIASIS IN THE NCHELENGE
AREA OF NCHELENGE DISTRICT**

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**A RESEARCH STUDY SUBMITTED IN PARTIAL FULFILMENT OF THE
BACHELOR OF SCIENCE NURSING DEGREE REQUIREMENTS IN THE
DEPARTMENT OF POST BASIC NURSING**

**SCHOOL OF MEDICINE
UNIVERSITY OF ZAMBIA**

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NOV,1996

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ABBREVIATIONS

WHO	---	World Health Organisation
NCSR	---	National Council For Scientific Research
TDR	---	Tropical Disease Research
TDRC	---	Tropical Disease Research Centre
PIR	---	Progress In Research
SRP	---	Schistosomiasis Research Project
DHMT	---	District Health Management Team
DDH	---	District Director Of Health
MOH	---	Ministry Of Health

DECLARATION

I hereby declare that the work presented here for a Degree of Bachelor of Sciences in Nursing has not been presented either wholly or in part for any other degree and is not currently being submitted for any other degree.

Signed-----
Candidate

Date-----

Approved-----
Lecturer

Date-----
Dec '96

STATEMENT /

I hereby certify that, this study is entirely the result of my own independent investigations. The various sources to which I am indebted are clearly indicated in the text and references.

Signed-----
Candidate

DEDICATION

This study is dedicated to my husband Wishart Hlabera for his patience and the encouragement tendered through out the period of training.

ACKNOWLEDGEMENTS

My heartfelt gratitude goes to my supervising lectures Mrs. P. Ndele and DR M. Ngandu whose guidance made this research study possible. Their patience and constructive criticism helped me make it what it is.

I wish to thank my sponsors, Netherlands Development Organization (SNV) for the scholarship to undertake the Bachelor of Science Degree in Nursing at the University of Zambia

My sincere gratitude goes to the council secretary at Nchelenge District Council and the community leadership in Nchelenge for granting me the opportunity to carry out the study.

I am deeply indebted to the hundred respondents in Nchelenge who constituted my sample .

I am also grateful to my fellow students Messrs. Davie Ntetema, Maureen Mubanga and Chishala Bunde Bunde for their guidance when things got bad.

Finally, I am grateful to Miss Namakau Mwambwa for typing the manuscript in time.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND INFORMATION

Schistosomiasis is one of the oldest diseases affecting man. In Egypt, records of its existence date as far back as AD 461 ¹. At a Schistosomiasis Control Project international conference recently, the Manchester Egyptian Mummy Project announced that it was going to undertake a paleo -epidemiological study of schistosomiasis in ancient Egypt by the use of modern Laboratory techniques to detect the disease in mummies. In addition, an epidemiological view of schistosomiasis in Egypt from 2686 BC to AD 461 (the time of the old Kingdom to the end of the Roman Period) will be reconstructed and comparisons made between the epidemiology in ancient Egypt and today ². In China, the archaeological records show that schistosomes have been parasitic companions of man for at least 3,500 years. There is no doubt the relationship stretches further back into the prehistoric time ³

It is estimated that there are 76 countries in which schistosomiasis is endemic. More than 600 million people are at risk and some 200 million people infected with over 2/3 being found in Africa ⁴. Accurate figures for morbidity and mortality of schistosomiasis are lacking ⁵. the problem is world-wide, but affects only the tropical and subtropical regions. In Africa, it is widely distributed from the Nile Delta to Central and South Africa, Sudan and Ethiopia. In Zambia records at the Ministry of Health indicate the presence of urinary schistosomiasis in all the nine provinces ⁶. In 1992, Eastern Province had the highest number of cases (22,538), depicting a prevalence rate of 23.2 per 1000 population. Lusaka Province had the second highest number of 13,922

cases, but its incidence rate of 11.6 per 1000 population was below that of Luapula Province which had 11,683 cases and a prevalence rate of 22.2 per 1000 population. Western Province had the lowest incidence rate of 4.1

The WHO expert committee on control of schistosomiasis have documented that schistosomiasis can be caused by any of the five (5) species of schistosoma ⁷:

- I. Schistosoma Haematobium;
- ii. Schistosoma Japonicum;
- iii Schistosoma Intercalatum;
- iv. Schistosoma Bovis; and
- v Schistosoma Mansoni.

Schistosoma haematobium mainly affects the urinary bladder and genitalia. It is widely spread in East, Central Africa, Egypt, Sudan and countries bordering the Mediterranean. It is also found in Madagascar, Mauritius and part of the Middle East. Schistosoma Mansoni has a more focal distribution, being present in East, West and Central Africa. Schistosoma Japonicum and Intercalatum are confined to Japan, China, Hong Kong, Burma, Phillipines and Laos. The two species mainly cause intestinal schistosomiasis. Bovis mainly affects animals ⁸.

Water plays an important role in the transmission of schistosomiasis, dams, rivers, lakes and canals provide breeding grounds for snails, the Intermediate host where asexual reproduction takes place. The snails then release cercariae into the surrounding water.

Cercariae are fork tailed protozoa which penetrate the skin of man as he/she goes about his/her normal activities of wading, washing, swimming etcetera. in the contaminated water. This puts at risk all communities where the source of water is a natural course of water like the lake, river, pond or man-made dams and canals ⁹. At a recent WHO Conference in Geneva, the medical experts pointed out that "owing to new irrigation and development projects, due to increased demands for food, the development itself has paved way for the advance of the problem of schistosomiasis" ¹⁰. As far as the disease is known, all ages and races and both sexes are susceptible to schistosomiasis, though infection is generally more severe in children . Although there is some evidence of an acquired immunity after an initial infection, there is no confirmed evidence. This is a basis upon which scientists are yet to come up with a vaccine ¹¹.

The public health significance of schistosomiasis is often under- estimated ¹². Like most helminthic infections, the distribution is widespread. While many may have the parasite, only a few have infection and severe disease. Many others with parasites have no symptoms at all. In spite of schistosomiasis being the second most prevalent tropical disease and a leading cause of morbidity in several foci in Africa, Asia and North America, many endemic countries do not recognise schistosomiasis as an important public health problem. And where it has been recognised, it receives only a low priority for control ¹³. Only countries which have recognised schistosomiasis control as a priority with National Programs of actions have been able to reduce the problem to insignificant levels as in Egypt. For the rest of the endemic areas, lack of resources has led to an increase in the number of cases. The extent and seriousness of morbidity produced by schistosomiasis is controversial and appears to differ with the experience of individual

investigators ¹⁴.

In Zambia, the environmental health unit of the Ministry of Health is responsible for the control of schistosomiasis ¹⁵. They are supposed to conduct surveys on the diseases among school children and apply the molluscides to water suspected to harbour snails. These programs have not borne any lasting results due to limited personnel and the prohibitive prices of molluscides. Like in other countries, Schistosomiasis does not rank highly on the list of priority health problems. However, the Ministry has been active through the work of the Tropical Diseases Research Centre (TDRC) and National Council for Scientific Research (NCSR) both of which have been undertaking research on the problem of schistosomiasis. The TDRC is a project incepted by WHO. The NCSR has a Bilharzia Control Project headed by Dr Sheharta. The project has been working on a local drug called Endod to treat bilharzia and a molluscide to kill the snails. Both drugs are on trial on the Copperbelt Province ¹⁶

The researcher has chosen to limit her study to urinary schistosomiasis. This is because data on the problem exists unlike the other forms of schistosomiasis which are not well documented. Data at the Ministry of Health indicates the existence of Bilharzia only.

1.2 STATEMENT OF THE PROBLEM

As quoted earlier from the bulletin of health statistics, Schistosomiasis is present in all the nine (9) provinces of Zambia. Where as Luapula Province recorded the 5th highest number of cases in 1989, the situation has worsened to a point where by 1992, Luapula Province recorded the 3rd highest number of cases (11,686) after Eastern and Lusaka (See table below).

TABLE: BILHARZIA INCIDENCE PER PROVINCE**1989 - 1992**

PROVINCE	1989	1990	1991	1992	RATE PER 1000 POPULATION
CENTRAL	5,769	11,134	6,740	8,158	10.5
COPPERBELT	16,023	8,725	7,689	6,774	6.3
EASTERN	17,804	15,625	17,574	22,538	23.2
LUAPULA	8,464	14,153	7,949	11,686	22.2
LUSAKA	13,412	7,712	8,228	13,922	11.6
NORTHERN	4,075	3,478	2,811	3,912	4.5
NORTH -WESTERN	11,684	12,831	8,679	9,870	25.8
SOUTHERN	12,280	15,886	11,339	9,006	9.5
WESTERN	2,750	4,526	2,071	3,815	4.1
TOTAL	92,261	94,074	73,080	89,681	11.3

Records for 1993 to date show an increase in the problem, and indicate that Nchelenge District contributes the highest number of cases to the provincial total number of cases, an indication that the problem has worsened over the years.

Nchelenge District lies in the Luapula Valley along the Lake Mweru and has a projected population of 127,000 most of which is concentrated along the Lake Shore ¹⁷. For Nchelenge, the problem of Urinary Schistosomiasis has stood the test of time with records at the hospital dating as far back as 1970. Like any upcoming peri -urban, the district has had its share of public health problems. Five years ago the list of the 5 priority health problems would have lead as follows :

- i. Malaria;
- ii. Cholera;
- iii. Dysentery;
- iv. Typhoid; and
- v. Schistosomiasis ¹⁸.

Today credit must go to the local health authorities for making cholera epidemics a thing of the past. By working with the department of water supply in ensuring that there is a constant supply of chlorine to treat water, the problems of cholera, dysentery and typhoid have been reduced to insignificant levels.

The same cannot be said of schistosomiasis which is widespread and affects all part of the district as reflected in the statistics at the Ministry of Health. All sexes and

age groups are affected though the prevalence is higher among the school children. The problem persists through out the year but depicts seasonal variations. Following heavy rains, there is a peak in infections in the period between November and March. The number of cases drops as the drought sets in Cold Weather on the other hand reduces contact with water and so the number of cases drops.

The direct effects of urinary schistosomiasis are underestimated because is chronic and runs a long and insidious course. Not only does it reduce the physical capacity but it lowers resistance to other infections, producing a marked reduction in productivity. Its long term effects are numerous. In a study of histopathological observation in new and classic model of schistosoma haematobium Infection, it was found that the disease caused a number of pathologies in the humans ¹⁹. In the urinary tract it caused granulomatous cystitis with polypoid mucosa sandy patches, fibrosis, obstructive uropathy, urethral alterations like polypoid formation, squamous cell carcinoma. Of notable interest is the association between urinary bladder Neoplasm and urinary schistosomiasis. In a study of 86 cases of bladder neoplasms at UTH, 70% of the cases were found with schistosoma haematobium ova there by indicating the close association between the two conditions ²⁰.

The control of urinary schistosomiasis is directed in particular to the treatment of school children in order to shorten the duration of heavy infections. In the long term, treatment of urinary schistosomiasis is an important measure for the prevention of carcinoma of the bladder.

This researcher through her long experience in Nchelenge was alarmed at the number of people who came to the hospital with complaints of haematuria. At least (5) patients were seen per day. It is possible that the number of people affected could be higher, if we take into account those who do not seek medical advice either due to long distance from the hospital, inability to afford user fees or just underestimating the seriousness of urinary schistosomiasis

In view of the above stated situation, the following are some of the researchers assumptions on the factors that could contribute to the prevalence of urinary schistosomiasis in Nchelenge

It could be that the residents of Nchelenge lack knowledge of schistosomiasis. It could also be the fact that most of the people in Nchelenge are fishermen. This occupation exposes them to infection of urinary schistosomiasis and so they are unable to protect themselves.

The other reason could be that when the people fall sick, they do not seek treatment or they seek treatment but are not given treatment due to lack of drugs. This coupled with a possible absence of a control program could be compounding to the problem.

1.3 LITERATURE REVIEW

Literature review has revealed that schistosomiasis is one of the most endemic diseases of warm climates. It is the highest cause of morbidity, second only to malaria ²¹. In Zambia studies on schistosomiasis have been designed to

evaluate the prevalence or incidence of schistosomiasis infections in general populations. These are selected groups of the general population like school children, hospital or clinic populations and selected hospital populations. This is to elucidate morbidity or a specific clinical or pathological conditions for example postmortem studies or patients with bladder carcinoma ²². No studies have been done to determine factors contributing to high prevalence, inspite of documentation that its prevalence rate is high in a number of studies done.

The main issues that arose from the literature reviewed included the following related broad categories.

1. About the causative organism
2. Risk of infection
3. Public Health significance
4. Occupation
5. Knowledge
6. Water contact behaviour
7. Health seeking behaviour
8. Management positive of cases
9. Control programs
10. Guidelines on control of schistosomiasis.

ABOUT THE CAUSATIVE ORGANISM

The WHO expert committee on control of schistosomiasis has documented that schistosomiasis can be caused by any of the five species of trematodes.

1. *Schistosoma Haematobium*;
2. *Schistosoma Japonicum*;
3. *Schistosoma Mansoni*;
4. *Schistosoma Intercalatum*; and
5. *Schistosoma Boris* ²³.

Schistosoma haematobium mainly affects the urinary bladder, urethra and genitalia. It is widely distributed throughout Africa, being especially prevalent in West, Central, East Africa, Egypt, the Sudan and countries bordering the Mediterranean. *Schistosoma haematobium* was first discovered by Theodore Bilharzia in Cairo in 1861 and the genus is sometimes called Bilharzia and the disease Bilharzias ²⁴.

Man is the only natural host in whom asexual reproduction take place. The eggs are passed in urine and gain access to fresh water. In the presence of warmth the eggs hatch into miracidia which enter the snails of the sub-genera *Bulims* and *Physopsis*. These are the intermediate hosts in which asexual reproduction takes place to produce large numbers of fork tailed cercariae which are liberated into the water where they survive for 2-3 days. Cercariae penetrate the skin of man when in contact with the contaminated water ²⁵. As they pass through the lungs, liver and portal vein, they mature and are carried to the venules draining the pelvic viscera within 4-6 weeks of infection. The females deposit their ova which are passed out mainly through the wall of the bladder in urine ²⁶. Many other eggs are retained in the tissues where they provoke an inflammatory reaction which is responsible for the disease. The mere presence of adult

schistosomes (which remain joined and continue to shed eggs for several years) does not give rise to pathological responses ²⁷. However the degree of morbidity and the intensity of infection are determined by the number of adult worms present in the human host and shedding eggs that may be deposited in organ tissue. Contact patterns determine the level of transmission and the intensity of transmission can vary greatly between communities ²⁸.

Along standing question in schistosomiasis has been the extent to which the different immune responses induced by schistosomiasis amount to a degree of protective immunity. The question is not yet fully resolved, but extensive evidence from field studies carried out in (some with TDR participation) many countries and notably in Brazil, the Gambia and Kenya, Indicates that the marked reduction in re-infection rates associated with increasing age is not directly related to the concomitant decrease in contact with water and consequently in exposure to infection, but may rather be due to acquired immunity. This is a basis upon which a vaccine is yet to be developed ²⁹.

RISK OF INFECTION

It is estimated that about 600 million people are at risk of getting infected with schistosomiasis ³⁰. At the WHO conference held in Geneva in 1984, the medical experts pointed out that owing to new irrigation and development projects due to increased demands for food, development itself has paved way for the advance of schistosomiasis. Dams, irrigation and fishing projects have provided new breeding grounds for snails which carry the schistosoma parasite ³¹. In Egypt, a study was done in two newly reclaimed areas, to determine schistosomiasis transmission, one area was to the east of

Elmorra lakes, on the Sinai side of the Suez Canal and the other Almoner, results of the study showed an increasing transmission rate in schistosomiasis because more infected snails were found in 1993/94 than in the previous year³².

Also at risk are rural communities where the source of water is a natural body of water like a lake, river or stream. The water has to be fresh and slow flowing or else the snails and cercariae will be swept by the current reducing the chances of infection³³. In a study of distribution of *Schistosoma Haematobium* in Isoka district, findings revealed a patchy distribution with differing prevalence rates between areas which were only short distances apart. This was because some areas used piped water, thereby limiting contact with infected water, other areas had swift flowing streams so that the snails were easily swept away. The highest prevalence rate were found in areas with impounded water. In these areas, under drying natural conditions, the snails migrate into the muddy bottom where they survive over a period of months, when the rains come, they refill and the population of snails increases. Such places may be important foci of transmission.

In endemic areas women and children are at highest risk. women are at risk because as they carry out the domestic activities, there is a more prolonged contact with water than men.

As for children, they are a high prevalence group, between 5-15 years, the school going age. This group contributes more to transmission through their patterns of water contact and indiscriminate urination and defecation. Their water contact patterns also means they are reinfected after treatment more rapidly than others. They spend long

hours playing in the water, swimming, wadding and fishing.

The transmission may be seasonal³⁴. Rainfall stimulates the production of young snails. And following heavy rains extra quantities of eggs are swept into water where they hatch into miracidia which enter the snails and reproduce into the cercariae which infect man. This leads to peaks in infections following heavy rains. As the drought sets in, not all the eggs hatch in dry conditions. Cold weather on the other hand reduces hatching and penetration by cercariae due to less contact of men with water leading to a drop in the number of cases

PUBLIC HEALTH SIGNIFICANCE

The public health significance of schistosomiasis is under estimated since aggregated reports from larger regions may not identify foci of high prevalence³⁵. In addition, the number of cases of schistosomiasis reported through the health service may be an under estimated since where drugs are not available, even patients with significant symptoms may not seek treatment. The fact that the disease is chronic and runs an insidious course means many may under estimate its seriousness. Extrapolation from detailed studies of lessons resulting from chronic infections indicates that there are tens of millions of people with serious chronic schistosomiasis illness in the world³⁶. Not only does schistosomiasis affect the physical capacity, but it also lowers resistance to other infectious producing a marked reduction in the productive capacity. Its long term affects have been associated with bladder and cervical carcinoma.

In a review of all cases of bladder cancer seen during a 5 year period at the UTH in Lusaka ³⁷, Bhagwandeem noted that, at this time carcinoma of the bladder was the third most important malignancy found in Zambia, and represented about 9% of all the malignancies seen at the department of pathology. Of the 217 cases of bladder cancer that he reviewed, 65% were associated with concomitant schistosomiasis and 75% of these were squamous cell carcinomas. More recently Elm and Purohit ³⁸, have shown that while 45% of the cadavers with non-malignant bladders had urinary schistosomiasis, 95% of those with malignancies were infected. Through performance of qualitative egg counts on digests of tissues from these cases, intensities as great as 200,000 eggs/g of tissue were obtained. Cervical cancer constitutes one third (1/3) of all cancers seen in Zambian Women and in one study of 274 cases, 24.4% was found associated with schistosomiasis ³⁹.

KNOWLEDGE

Despite the present day knowledge on schistosomiasis the disease has increased in Africa where more than 1/2 the cases exist. In most cases it thought to be economically and socially difficult to control. Actually the main hindrance to its control in many areas is lack of knowledge which affects the attitudes and practices towards schistosomiasis.

In a KAP study to determine perception, awareness, knowledge and practices of schistosomiasis in Kampumbu area of Isoka District, an area known for high prevalence of schistosomiasis ⁴⁰, the study revealed that 77% of the population did not consider schistosomiasis to be a serious diseases. The study also revealed that the residents of

Kampumbu associated schistosomiasis with eating raw fruits and vegetables. They did not associate the disease with fresh water snails. A crucial factor that came out of the study about schistosomiasis transmission was lack of knowledge concerning the life cycle of the schistosomiasis.

Cultural norms prohibited the communication about the disease between adults and children because blood in urine is often associated with STD.

In another study to review the exposure of United States Army personal in the Phillipines, the report emphasised that most of the exposure which resulted in 1,500 acute cases was *directly due to ignorance of the mode of infection ,that is, the presence of cercariae in water and their penetration of the skin*⁴¹.

OCCUPATION

Any form of occupation that involves prolonged contact with contaminated water in endemic areas, puts people at risk of infection with schistosomiasis. This is because, cercariae, the infectious agent for schistosomiasis is found swimming freely in water, it penetrates the skin of man when he is in contact with water.

In a study of schistosomiasis among the labouring community of the Gezire irrigated areas⁴² a high prevalence rate of over 50% was found. This was attributed to the fact that many of them were employed as canoe cleaners, guards of irrigated Eucalyptus plants. This meant spending lot of time in the water. Because both men and women did the same jobs, no difference was found in the prevalence rate between that of

men and women. The same community was thought to have been contributing to spread of the problem to nearby areas, where the disease had never been recorded before. This was because the immigrant labourers had a nomadic life style of moving from place to place in search of job opportunities. In a study of bilharzia in Khartoum University student ⁴³, a prevalence rate of 69% was found, this was attributed to the fact that some of the University students came from endemic areas.

People moving in and out of endemic areas spread the disease to areas not known to have the problem

WATER CONTACT BEHAVIOUR

In the study of schistosomiasis among the labouring community of Gezire irrigated areas ⁴⁴, 5 human water contact behaviours were identified as critical in the transmission of schistosomiasis: collection of water from the canal, washing in the canal, bathing in the canal, swimming in the canal and excreting in the canal. It was noted that since the canal was the only source of water, people spent a lot of time on these activities.

People in endemic areas depend on rivers, dams, canals or lakes for most of their water needs. These water bodies contain cercariae for most of the year. Where as adults may use such water bodies for domestic purposes, children may spend a lot of time for recreational activities such as playing, wading, swimming and so forth. The water contact behaviour exposes the people to the cercariae.

HEALTH SEEKING BEHAVIOUR

People should be able to take measures to protect themselves from disease or when they do get disease they must take the necessary steps by seeking medical advice. There are many reasons why people may not do this. One reason could be that they do not have adequate knowledge on the disease in question and so do not fully understand the implications. The other reason could be that they take the necessary steps to seek medical advice but do not get the required treatment because its not available at the local hospital.

In a KAP study pertaining to schistosomiasis of a rural community in Zimbabwe before and after health education, the prevalence rate was reduced after Health Education to change the attitudes and practices ⁴⁵.

TREATMENT OF POSITIVE CASES

Is cardinal in the control of schistosomiasis. Positive cases act as reservoirs of infection because as long as they remain untreated, they will keep on passing on the infection to others and will keep getting re-infected.

Most patients can be adequately treated with the oral administration of praziquantel, a drug of choice which has a broad spectrum of activity against trematodes and many species of cestodes. Its safe and has an egg clearance rate of 60-90% in positive patients. It also reduces the lesions in the early stages of the disease ⁴⁶, the introduction of praziquantel on the market has led to a shift away from transmission control to the control of severe morbidity ⁴⁷, a strategy which relies primarily on

diagnosis and chemotherapy, supplemented by snail control.

Egypt, a country where schistosomiasis is becoming less important as a public health, has scored successes because of a National Schistosomiasis Control Programme which organises free surveillance and diagnosis to all rural communities and provides free chemotherapy to all positive cases ⁴⁸.

The main limitation on the use of praziquantel for control is the high re-infection rates in endemic areas, even after mass treatment making it necessary to give repeat treatments. The cost of praziquantel is also prohibitively high for control programmes ⁴⁹.

GUIDELINES ON CONTROL OF SCHISTOSOMIASIS

Schistosomiasis control requires a long term commitment, While the prevalence of schistosomiasis can be reduced in the short term, long term planning of at least 10-20 years, depending on a country's level of socio-economic development is required if adequate surveillance and control are to be maintained. In recent years the emphasis on schistosomiasis control has shifted from transmission control mainly by environmental and other vectors to the control of morbidity in infected individuals ⁵⁰. More attention is now devoted to identifying infected individuals and offering them treatment.

Experience has shown that the strategy for control of morbidity endorsed by WHO is both feasible and effective. Each country must define its own goes for the control of schistosomiasis depending on its resources and capabilities. WHO recommends the program to include health education, chemotherapy, provision of water

supply and sanitation and snail control. The optimal balance between these components for most cost effective strategy will differ from one country to another as well as over time. The following 6 factors should be considered when developing schistosomiasis control strategies for specific control:-

1. The felt needs of the community;
2. The types of schistosomiasis present, the prevalence and intensity of infection and the prevalence and severity of morbidity;
3. Ecological, Environmental and Epidemiological characteristics;
4. The accessibility of Primary Health Care;
5. The capacity for central and district management and technical support; and
6. The strength of inter-sectoral collaboration.

HEALTH EDUCATION

Its generally agreed that health education is more than more information or propaganda, its a continuous and active process of information from other people and from experience. Its one of the fundamental Public Health methods to achieve goals of preventive programs.

Health Education is that aspect of health care directed towards promoting and reinforcing healthy behaviour through full participation of the individuals and communities concerned ⁵¹. Its a voluntary process that encourages people to make informed decision to improve and maintain their health.

The aim of Health Education in schistosomiasis is to help people to understand that their behaviour is a key factor in the transmission of the diseases. Its more practical to explain the problem in terms of peoples involvement with schistosomiasis than to attempt to describe the complex life cycle of the parasite that causes the disease.

Health Education can play a role in control of disease because if people learn how to protect themselves and their families.

In a Blue Nile project aimed at controlling water associated diseases like schistosomiasis, Malaria and Diarrhoea ⁵², the study revealed that 56% knew what schistosomiasis was and its mode of infection while 35% did not know how to protect themselves. After intensive programs of health education among the school children, on TV and Radio, the second study revealed that 86% were knowledgeable and 77% knew how to protect themselves. This was followed by a drop in the overall prevalence rate of water borne diseases.

PROVISION OF WATER SUPPLY AND SANITATION

By providing the community with alternative water sources, away from the contaminated water sites, you reduce contact with water. Provision of latrines helps to reduce contamination of water through indiscriminate excreting behaviour.

In a program to reduce transmission of schistosomiasis among the community of a Rice irrigation scheme in Kenya ⁵³, utilisation of strategies like providing alternative water sources, latrine construction and health education helped to increase the knowledge of the people and the rate of intensity of schistosomiasis came down.

CHEMOTHERAPY

Is primary to any morbidity control program. It helps to reduce the source of infection. Egypt, a country which has scored successes in schistosomiasis control has a control programme which provides access to free diagnosis and chemotherapy in endemic areas ⁵⁴. In Indonesia, during the 1970s, every one of the 10,000 inhabitants of the Lindu and Napu valley was at risk of infection and clinical disease. In 1981, the Centre for Diseases Control initiated intensive mass treatments that dramatically reduced prevalence rates. Building on these results, the Schistosomiasis control programme began in 1984, to carryout its own strategy for containing the diseases through mass treatments with praziquantel every six months⁵⁵. This is followed by a specimen survey to measure reduction in prevalence rate throughout the year, volunteers keep watch over the community in order to detect early clinical symptoms of schistosomiasis. Persons with symptoms are treated with locally available praziquantel.

SNAIL CONTROL

Is a strategy which has not scored a lot of successes, Snail control can be undertaken in 3 ways ⁵⁶:

- I. Chemical control;
- ii. Environmental control; and
- iii. Biological control.

Chemical control involves the application of molluscides to kill the snails. Large scale of mollusciding is no longer recommended due to their prohibitive costs which are not easy to sustain. Currently there is interest in the use of compounds derived from plants which are known to have molluscoid activity. In Zambia the NCSR is spearheading a program on the Copperbelt to test a molluscoid derived from a local plant.

Biological methods use competitor snails i.e. the introduction of snail species that are not or are poor carriers of the schistosomes of man to disperse species that harbour these parasites.

1.4 OPERATIONAL DEFINITIONS AND TERMS

1. **FACTORS CONTRIBUTING** - Determining causes or reasons which make people of Nchelenge to get infected with urinary Schistosomiasis.
2. **PREVELENCE** - The number of cases of urinary schistosomiasis.
3. **OCCUPATION** - The type of employment that one engages in
4. **KNOWLEDGE** - The ability to tell the mode infection, signs and symptoms and how urinary schistosomiasis can be prevented.
5. **WATER CONTACT BEHAVIOUR** - Activities that people carry out when in

contact with water.

6. **HEALTH SEEKING BEHAVIOUR** - The steps individuals take when they are infected by urinary schistosomiasis
7. **MANAGEMENT OF POSITIVE CASES** - The way patients who present with signs and symptoms of urinary schistosomiasis are diagnosed and treated.
8. **POSITIVE CASES** - Persons who present with signs and symptoms of urinary schistosomiasis
9. **CONTROL PROGRAMME** - Measures put in place by the health authorities to control the transmission of schistosomiasis

CHAPTER 2

2.1 GENERAL OBJECTIVE

The study is aimed at determining the factors that contribute to the high prevalence of Urinary Schistosomiasis among the residents of the Nchelenge area of the Nchelenge District.

2.2 SPECIFIC OBJECTIVES

In order to meet the general objectives, the following specific objectives were taken into account:

- 1. To determine the level of knowledge of Nchelenge residents on urinary schistosomiasis and factors that affect the level of knowledge concerning urinary schistosomiasis;
- 2. To establish if occupation of the Nchelenge residents contributes to prevalence of schistosomiasis;
- 3. To determine if water contact behaviours contribute to the prevalence of schistosomiasis among the Nchelenge residents;
- 4. To establish if health seeking behaviour of the Nchelenge residents contribute to the prevalence of schistosomiasis;
- 5. To establish if health programs and resources are available for the control of schistosomiasis in Nchelenge;
- 6. To utilise research findings to make recommendations to the relevant authorities for action; and
- 7. To stimulate further research

2.3 INDICATORS AND CUT OFF POINTS FOR VARIABLES

1. OCCUPATION	CUT OFF POINTS
Involves prolonged contact with water	Risky

Doesn't involved any contact with water

Not risky

2. KNOWLEDGE

Understands the mode of infection, signs and symptoms
and prevention of schistosomiasis.

Adequate

Only understands one or more of the above

Inadequate

3. WATER CONTACT BEHAVIOUR

Engagement in activities that involve prolonged contact
with water and its possible contamination

Negative

Non engagement in activities that involve prolonged contact
with water and its possible contamination

Positive

4. HEALTH SEEKING BEHAVIOUR

Sought medical advice immediately noticed signs and
symptoms of urinary schistosomiasis

Positive

Sought medical advice after sometime or didn't seek any
medical advice

Negative

5. MANAGEMENT OF POSITIVE CASES

Diagnose using laboratory facilities and given anti schistosomal treatment	Adequate
Diagnose symptomatically and not given anti schistosomal treatment	Inadequate

6. CONTROL PROGRAMME

Measures designed to control transmission schistosomiasis in place	Present
Measures designed to control transmission not in place	Not present

7. PREVELENCE

Have suffered once or less in the last 2 years.	Low
Have suffered twice or more in the last 2 years	High

CHAPTER 3

METHODOLOGY

3.1 RESEARCH DESIGN

The research study was aimed at determining the factors contributing to high prevalence of urinary schistosomiasis among the residents of Nchelenge area of Nchelenge District. A descriptive research design was used to enable the researcher to systematically collect an account of such factors and data that could give a clear picture of the presented factors.

3.2 RESEARCH SETTING

The study was conducted in the Nchelenge area of Nchelenge District. The area is made up 10 villages within walking distance and has population characteristics varying from the educated to illiterate. It follows therefore that life style and health related behaviour varies too.

The researcher chose to carry out the study in Nchelenge area because it has never been chosen as a sentinel for a study. The place experiences the problem of urinary schistosomiasis and contributes the highest figure to the district as well as to the provincial returns. Through my experience of working in the area for 6 years, it came to my notice that an average of 5 people visited the clinic daily with problems of haematuria. I feel indebted to do a study to come up with the factors contributing to the problem so that recommendations can be made to the relevant authorities for action.

3.3 STUDY POPULATION

The study population consisted of households (male and female), living in the Nchelenge area of Nchelenge district, and all the health workers who attend to cases of urinary schistosomiasis in the out patients departments of the two hospitals in the Nchelenge area. The health workers were limited to 10 study units. The study units were heads of households aged from about 18 years. to about 45 years.. This age limit was anticipated to facilitate comprehension of the structured questionnaire on urinary schistosomiasis and related issues better than those outside this age limit.

3.4 SAMPLING METHOD

SAMPLE 1

A total of 90 respondents were interviewed.

Sampling Method

A multistage sample random sampling method was used. Since the Nchelenge area has a total of 10 villages, the people to be interviewed were from all the ten (10) villages, to ascertain if distance from the lake is a significant factor in the transmission of urinary schistosomiasis, and to determine any other factors that could be specific in the transmission of schistosomiasis.

The multistage simple random sampling was done as follows:

Stage I - Using the simple random sampling, lottery technique, symbols of the sections of each of the ten villages were put in a container, mixed well and one section was selected randomly, the same was done for the remaining 9 villages until a total of 10 sections was selected, one from each of the 10 villages.

Stage II: For each of the selected sections, the households were numbered and the numbers of the households were put in the container, mixed well and then 9 households selected randomly for each of the 10 sections to make a total of 90 households.

The heads of the households were interviewed if present, or the oldest adult who lived there. The main advantage of using this sampling method is that a sampling frame of all the individual units was not required for the total population. This method also gave each household an equal or non-zero chance of being included in the sample.

SAMPLE 11.

A total of 10 health workers were interviewed . These constituted the total number of study units of health workers in the outpatient departments of the two hospitals in the Nchelenge area.

3.5 DATA COLLECTION INSTRUMENTS

Data was collected using two types of instruments

- i. Self administered questionnaires.
- ii. Structured interview schedule using a standardised questionnaire.

The self administered questionnaire was administered to the health workers since they were literate. It had both predetermined and open ended questions. The structured interview was used on the illiterate and questions had to be translated into vernacular. For households who were able to read and write , questionnaires were given for them to fill in.

3.6 DATA COLLECTION

Data collection was done over a period of 2 weeks from 1st to 15 Th. September, 1996. The self administered questionnaires were distributed personally and

then collected the following day. The structured interviews are the ones which took up a lot of time due to the translation into vernacular that was involved.

3.7 ETHICAL CONSIDERATION

Before data collection, the researcher used official letters from the head of Post Basic Nursing Department to get permission from the District Director of Health and Council Secretary of Nchelenge District. Before administering each instrument, we explained the purpose of the study and assured the respondents of confidentiality in the responses to be obtained.

3.8 PILOT STUDY

Was conducted in Kalikiliki Compound of Lusaka which has similar conditions to Nchelenge. 5 self administered questionnaires were given to health workers at Mtendere Clinic and 5 interviews were conducted at Kalikiliki Compound.

Following this the researcher was able to assess how long it took to administer each tool. Some open ended questions were changed to close ended, some questions were rephrased for easy understanding by respondents and additional questions were added to the questionnaire.

3.9 LIMITATION OF THE STUDY

- a. Time was limited. There were other researches to be completed and submitted within the same period. At the same time, there was need to study for exams.

- b. Because of the time factor, it was not possible to conduct the study on a large scale, which necessitated to have a small sample size and confine the study to the Nchelenge area only

CHAPTER 4

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

DATA ANALYSIS

The data was collected from ninety (90) heads of households and ten (10) health workers, and analysed by computer. The data was first edited for completion and accuracy. The open ended questions were categorised and then entered on a master sheet.

The findings are presented in table format because this conserves space. The narrative is reduced and tabulated data is easier to recall. The responses were calculated in percentages which were rounded up to the nearest whole number since the researcher dealt with human beings who could not be broken into fractions.

PRESENTATION AND INTERPRETATION OF FINDINGS

Two different samples (1 and 11) were used in the study. The data collected is represented in table form to facilitate interpretation of the findings.

Table 1 to 12 represents the findings from sample 1 while the findings in Table 13 to 18 represent sample 11

TABLE 1 - DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

DEMOGRAPHIC CHARACTERISTIC	FREQUENCY	PERCENTAGE
1a -AGE GROUP		
18 - 24	10	11%
25 - 31	30	33%
32 - 38	20	22%
39 - 45	30	33%
1b - SEX		
Male	54	60%
Female	36	40%
1c-LEVEL OF EDUCATION		
None	8	8%
Primary	48	53%
Secondary	28	31%
College	5	7%
University	1	1%
1d-OCCUPATION		

Fisherman	57	64%
Marketeer	12	13%
Farmer	14	15%
Casual Worker	4	4%
Administrator	1	1%
Bricklayer	2	2%
1e-TYPE OF TOILET		
Pit Latrine	67	75%
Water Closet	10	11%
VIP	3	3%
None	10	11%
1f-SOURCE OF DOMESTIC WATER		
Lake	64	71%
Well	10	11%
Tap	11	12%
Borehole	5	6%
1g-WASH FACILITY		
Lakeside	40	45%
Bathtub	10	11%
Booth	30	33%

Pit Latrine	10	11%
1h-LAUNDER FACILITY		
Lake side	71	79%
Tub/Bucket	10	11%
Tap	9	10%

INTERPRETATION OF TABLE 1

1a - The majority 60 (66%) of the heads of households, were in the age group 25 - 31 and 39- 45

1b - The majority 54(60%) of the respondents were male.

1c - The majority 48 (53%) of the respondents had attained primary education

1d - The majority 57(64%) of the respondent were fishermen

1e - The majority 67 75%) of the respondents use pit latrines

1f - The majority 64 (71%) of the household, depend on the Lake for domestics water

1g - 40 (45%) of the households use the Lakeside for washing their bodies

1h - 71 (79%) of the households use the Lakeside for laundering

Table 2 - Occupation in Relation to Suffering from Urinary Schistosomiasis

Occupation	<u>Suffering from Urinary Schistosomiasis</u>		
	Yes	No	
Fisherman	57 (92%)	0(0%)	57 (92%)
Formal	2 (4%)	0(0%)	2 (4%)
Informal	2 (4%)	0(0%)	2 (4%)
Total	61 (100%)	0%	100%

The majority 57 (92%) of the respondents who suffered from urinary schistosomiasis were fishermen.

Table 3 - Knowledge of what Bilharzia is

Responses	Frequency	Percentage
Yes	81	90%
No	9	10%
Total	90	100

The majority 81 (90%) of the respondents knew what bilharzia is.

Table 4 - Source of Information on Bilharzia

Response	Frequency	Percentage
Friends	50	56%
Printed Literature	7	8%
Radio	10	11%
Health worker	13	14%
Experience	10	11%
TOTAL	90	100%

The most frequent source of information on Bilharzia was friends (56%)

Table 5 - Level of education of head of household in relation to knowledge on urinary schistosomiasis

Level of Education	Knowledge of Urinary Schistosomiasis		Total
	Knowledgeable	Not knowledgeable	
None	0 (0%)	8 (9%)	8 (9%)
Primary	10 (11%)	38 (42%)	48 (53%)

Secondary	25 (28%)	3 (3%)	28 (31%)
College	5 (6%)	0 (0%)	5 (6%)
University	1 (1%)	0 (0%)	1 (1%)
Total	41(46%)	49 (54%)	90 (100%)

The majority 49 (54%) of the heads of households are not knowledgeable on urinary schistosomiasis

Table 6 - Level of Knowledge of Head of Household in Relation to experiencing Urinary Schistosomiasis in the Family.

Level of Education	Knowledge of Urinary Schistosomiasis		Total
	Yes	No	
None	8 (9%)	0 (0%)	8 (9%)
Primary	35 (39%)	13 (14%)	48 (53%)
Secondary	18 (20%)	10 (11%)	28 (31%)
College	0 (0%)	5 (5%)	5 (6%)
University	0 (0%)	1 (1%)	1 (1%)
Total	61(68%)	29 (32%)	90 (100%)

Most of the respondents, 61 (68%) who were knowledgeable still got the bilharzia.

Table 7 - Suffering from Bilharzia

Responses	Frequency	Percentage
Yes	61	68%
No	29	32%
Total	90	100

The majority 61 (68%) of the respondents suffered from Bilharzia.

Table 8 - How soon medical advice was sought *

Responses	Frequency	Percentage
Immediately	16	26%
After sometime	35	57%
Didn't seek any medical advice	10	17%
Total	61	100%

**** The question did not apply to some respondents

The majority 35 (57%) of the respondents sought medical advice after sometime.

Table 9 - Where medical advice was sought *

Responses	Frequency	Percentage
Hospital	44	72%
Traditional healer	7	12%
Didn't seek any advice	10	16%
Total	61	100%

****The question did not apply to some respondents

The majority 44 (72%) sought medical advice at the hospital

Table 10 - At the hospital, were they given medicine?*

Responses	Frequency	Percentage
Yes	10	23%
No	34	77%
Total	44	100%

****The question did not apply to some respondents

Only 10 (23%) of those who went to the hospital were given medicine

Table 11 - Was any health education given at the hospital?*

Responses	Frequency	Percentage
Yes	5	11%
No	39	89%
Total	44	100%

****The question did not apply to some respondents.

Most of the respondents 39 (89%) who went to the hospital were not given health education

TABLE 12 -NUMBER OF TIMES RESPONDENTS HAVE SUFFERED FROM URINARY SCHISTOSOMIASIS IN THE LAST TWO YEARS

Responses	Frequency	Percentage
0 - 1x	35	39%
2 and more	55	61%
Total	90	100%

The majority 55(61%) of the respondents suffered from urinary schistosomiasis 2 times and more

Table 11 - Was any health education given at the hospital?*

Responses	Frequency	Percentage
Yes	5	11%
No	39	89%
Total	44	100%

****The question did not apply to some respondents.

Most of the respondents 39 (89%) who went to the hospital were not given health education

TABLE 12 -NUMBER OF TIMES RESPONDENTS HAVE SUFFERED FROM URINARY SCHISTOSOMIASIS IN THE LAST TWO YEARS

Responses	Frequency	Percentage
0 - 1x	35	39%
2 and more	55	61%
Total	90	100%

The majority 55(61%) of the respondents suffered from urinary schistosomiasis 2 times and more

The majority of the respondents, 9 (90%), diagnose these patients of urinary schistosomiasis using signs and symptoms

Table 16 - Description of the situation regarding the availability of anti schistosomiasis drugs at institutions in the Nchelenge Area

Responses	Frequency	Percentage
Always available	2	20%
Available sometimes	8	80%
Never available	0	0%
Total	10	100%

Most 8 (80%) of the respondents described the situation of availability of anti-schistosomal drugs as only available sometimes.

Table 17 - Is there a control program for schistosomiasis

Responses Frequency

		Percentage
Yes	0	0%
No	10	100%
Total		100%

CHAPTER 5

DISCUSSION OF FINDINGS AND IMPLICATIONS

The study was aimed at determining the factors that contribute to high prevalence of urinary schistosomiasis in the Nchelenge area of Nchelenge District. Two types of instruments were designed and used. A scheduled interview was used on the households while a self administered questionnaire was given to the health staff.

BACKGROUND INFORMATION

The underlying assumption behind the study was that there was a high prevalence of schistosomiasis in the Nchelenge area brought about by a number of factors. These variables included occupation, knowledge, water contact behaviour, health seeking behaviour, management of positive cases and control program.

The households' response to the question 'How many times have you suffered from Urinary Schistosomiasis in the last 2 years revealed that most 54 (61%) of the respondents had suffered twice or more times, a high frequency (table 12). All 10 (100%) of the health workers who participated in the study admitted attending to positive cases. The majority (60%) said they attended to more than 3 cases per day (table 18). This is a high number which suggests that urinary schistosomiasis is indeed a problem in Nchelenge.

Out of the 10 (100%) health workers who took part in the study, 5(50%) were clinical officers, only 1(10%) is an Environmental Health Technician. They all have the

Out of the 10 (100%) health workers who took part in the study, 5(50%) were clinical officers, only 1(10%) is an Environmental Health Technician. They all have the basic knowledge of schistosomiasis and so can competently diagnose and treat cases of urinary schistosomiasis. The only problem is that they lack the resources to manage the positive cases.

OCCUPATION

Table 1d reveals that 57 (64%) of the households earn their living from fishing. When they go fishing, they ordinarily take along another member of the family or friend to go and help with the handling of nets. This puts the extra person at risk, thereby increasing the number of people who get exposed to contaminated water. Of late there has been an influx of fishermen from other towns, they lead a mobile life from one fishing camp to another, another factor which could be contributing to the spread of infection to other areas of Nchelenge District. Since the snails that transmit schistosomiasis are found on the Lake shore, it is possible that exposure to the infection in the case of fishermen occurs when their boats are anchored in the shallow waters near the shore awaiting the departure to the deeper central waters where the fishing takes place or when the fishermen anchor their boats with their catch for people to buy. Those who come to buy stop in the shallow waters and get exposed to the infection as well. The water along the shore is stable and slow flowing, a point which has a positive impact on the survival of snails and cercariae ⁵⁷. This could be the explanation to why all 57(64%) of the fishing households experienced the schistosomiasis.

Similar findings were found in another study done ~~to determine~~ to determine schistosomiasis among the labouring immigrants in the Gezire irrigated area in Sudan⁵⁸. A high prevalence rate of over 50% was found among both the men and women because most of them were employed as canoe cleaners and guards of irrigated Eucalyptus plants. Because their jobs kept them in contact with water, a high prevalence rate was found. Any form of occupation that involves a prolonged contact with contaminated water in endemic areas, puts the person at risk of urinary schistosomiasis, because of the possibility of being penetrated by cercariae, the infectious agent of urinary schistosomiasis. At risk are all workers who spend a lot of time in or with water for example fishermen, canal workers, irrigation workers etc.

In another study to determine the epidemiology of schistosomiasis on the shores of Lake Kariba ⁵⁹, the study revealed that though snail densities were present at all the water contact points surveyed, the highest snail numbers were in areas with vegetation. Snail occurrence was also associated with distance and depth from the shore. Snails were found at 50 metres distance from the shore if depth was less than 5 metres and at over 15 metres distance if depth was more than 5 metres. The study demonstrates how the depth and speed of water affect snail densities.

KNOWLEDGE

The study revealed that although 81(90%) of the respondents said they knew what Bilharzia is (table 3) only 41 (46%) of the respondents had adequate knowledge of urinary schistosomiasis (table 5). Of those who had adequate knowledge, 25 (28%) had attained secondary school education (table 2). The study revealed a relationship between

the level of education and knowledge of schistosomiasis in that the more years one spent in school the more knowledgeable they were, but still got the schistosomiasis (table 6). The study also revealed that the level of education among the females was low and so they were not knowledgeable. This is noteworthy because the women have better chances of getting health information when they attend antenatal and children's clinics. This doesn't appear to have been the case in Nchelenge. Most of the respondents 50 (56%), said they got their information from a friend (table 4)

Similar findings were found in KAP study of schistosomiasis on a rural community in Zimbabwe⁶⁰. Out of a total of 350 households, 50% accepted awareness and knowledge of schistosomiasis being a problem. A fairly high proportion of the educated respondents were able to describe the signs and symptoms and how it could be prevented.

If people do not adequately appreciate the implications of a disease due to lack or insufficient knowledge, they will not take measure to protect themselves and their families.

WATER CONTACT BEHAVIOUR

The study revealed that 64 (71%) of the respondents depend on the lake for domestic water (table 1f), 71 (79%) do their laundry at the lake (table 1h) and 40 (45%) use the lakeside when washing their bodies (table 1g). It's clear that for many, the lake is the main source of water since only 26 (29%) use other sources like borehole or tap. The taps tended to be communal in that the owner levied a fee per month on those using the

piped water point. This might discourage those unable to afford the levy. The study didn't demonstrate any difference in prevalence between those who live further from the lake and those near the lake. This can be explained by the fact that regardless of distance, most households still trekked to the Lake for domestic water, laundry and bathing. Since the lake stretches a long distance beyond the boundaries of the Nchelenge area, most of the villages are within a walking distance from the lake. The problem was less among the respondents who had other sources of water for example the tap, well or borehole. This could be attributed to limited contact with water.

In a similar study of schistosomiasis among the labouring community of Gezire, the behaviour of the immigrants was observed over a period of 12 months. The study identified 5 water contact behaviours which were thought to be critical in the transmission of schistosomiasis among the immigrants ⁶¹:

- I. Collecting water from the canal - the only source of water;
- ii. Washing in the canal;
- iii. Bathing in the canal;
- iv. Swimming in the canal;
- v. Excreting in the canal - a behaviour which was observed among the younger children.

They were observed urinating and defecating while playing in the canal. Some adult were seen urinating less than 100 metres from the canal even though they had latrines at their homes. By so doing a person can be the sole source of his own re-infection as well as that of his family and friends.

In Nchelenge, like most endemic areas, children were observed engaging in recreational activities like swimming, playing, wadding and fishing because there are no communal recreational facilities apart from football pitches, to keep them occupied. In most endemic areas, children are the most affected because of their water contact behaviour. In Nchelenge, most of the households that experienced the problem of schistosomiasis, had either the head of the household who was a fisherman or a school going member of the family affected.

HEALTH SEEKING BEHAVIOUR

Table 7 reveals that 61 (68%) (table 7) of the respondents suffered from urinary schistosomiasis. The study further revealed that of the 61 (68%) who got the schistosomiasis, only 16 (20%) sought medical advice immediately, 35 (57%) only sought medical advice after sometime, while 10 (17%) never sought medical advice at all (table 8). Out of the 51 (84%) who sought medical advice, only 44 (72%) sought advice at the hospital, 7 (12%) sought advice from a traditional healer (table 9). All those who sought advice from a traditional healer acknowledged the fact that they did not get cured. If people do not seek medical advice or do not get treated when they seek advice, they remain potential sources of the infection. The fact that they did not receive treatment, the next time they are faced with a similar problem they will not take a positive health seeking behaviour.

Problems of health seeking behaviour are re-affirmed by the findings in studies done under the Blue Nile project. The project was aimed at controlling water associated diseases in the Sudan ⁶². In the first study it was found that only 56% of the respondents

know what schistosomiasis was and its mode of infection, 35% didn't know how to protect themselves. After intensive programs of health education, the second study revealed an overall increase in the knowledge of schistosomiasis and its prevention from 56% and 35% to 86% and 77% respectively. This was also followed by a positive change in ability to seek diagnosis and treatment.

The ability of people to seek treatment when faced with a health problem is determined by a lot of factors. They should first and foremost realise the severity of the problem if medical advice is to be sought. Secondly they should be aware of the benefits of seeking treatment as weighed against not seeking medical treatment . If they perceive barriers to seeking the medical treatment, they will not do so. Health workers could go along way in changing the health seeking behaviour of populations which in turn will have an impact on their ability to seek treatment when faced with health problems ⁶³.

MANAGEMENT OF POSITIVE CASES

The study revealed that there is inadequate management of positive cases of urinary schistosomiasis. Where as 44(72%) of those who got urinary schistosomiasis sought medical advice at the hospital, only 10 (23%) got the antischistosomal treatment (table 9). Of those who sought medical advice at the hospital only 5 (11%) were given Health Education (table11). Another sad situation because Health Education enlightens the clients on how to avoid a problem next time. The treatment of positive cases is primary in any morbidity control programme of schistosomiasis.

In Egypt, a country where schistosomiasis was once the scourge of the rural communities, had recorded successes and its gradually becoming less important as a public health problem⁶⁴ starting from the time the oral drug praziquantel produced a spectacular drop in the infection rate among 30,000 school children from 90% to 13%⁶⁵, control programmes in place ensure access to free diagnosis and free chemotherapy in all health centres serving the endemic areas. Continuous surveillance of risk groups like school children and residents of endemic areas is also undertaken.

CONTROL PROGRAMME

The study revealed that there is no local control programme in place for schistosomiasis. All 10(100%) the health workers alluded to this fact(table17)

A control programme is primary in the control of schistosomiasis morbidity. It helps to control transmission therefore reducing the incidence rate. In Morocco for example, two decades ago, 5% of the population was at risk of infection (65% of these were children under 14 years)⁶⁶. The government established the schistosomiasis control program in the mid 1970s. The program was aimed at controlling in irrigated areas, reduce transmission in endemic areas and prevent new infections. A central office plans, supervises and evaluates control programs. The staff at rural health centres, dispensaries and laboratories carry out control activities. The Ministry of Health provides funding for the program. PHC workers teach basic health and hygiene in the community. They also screen urine samples for infection in both endemic and areas of potential transmission and treat infected people with praziquantel. Other workers routinely survey snail populations at sentinel water pools. Niclosamide is used as molluscides in selected areas

where transmission is probable. Each local health service is a level of the schistosomiasis control programme. The Ministry of Health co-operates in a continuous evaluation of the program with the help of a specially designed information system.

The control programme was started in only a few provinces to give administrators the chance to refine procedures, develop treatment protocols and establish criteria for mollusciding. In 1982, the program was expanded to the whole country and linked to the system for data collection and evaluation.

Careful planning. Implementation and monitoring of the program has paid off dividends in Morocco. Whereas 10,628 cases of schistosoma heamatobium were detected in 1983, the number fell to 2,568 in 1987. The overall positivity rate has fallen from 7.8% in 1983 to 2.3% in 1990. Intensive screening is no longer necessary though Health Workers continue to screen selectively. Staff at rural health centres do regular parasitological check up among primary school children whose positivity rate was 1.3% in 1990. The switch from metrifonate to praziquantel, of which only one dose is needed, has vastly improved the efficiency of chemotherapy. In 1990, 90.2% of those treated had no sign of infection by their second check-up.

HEALTH SYSTEMS IMPLICATIONS

The study has revealed that there is a considerable gap between what is expected in a schistosomiasis endemic area and what is happening in Nchelenge District.

The study revealed that most Nchelenge Residents are not knowledgeable about urinary schistosomiasis and so practise water contact behaviours that favour the transmission of schistosomiasis. Most respondents did not associate snails with Schistosomiasis. If anything some thought fish had something to do with the schistosomiasis. Very few respondents got their information from the health worker. The Nchelenge Residents have negative health seeking behaviour in that they didn't respond positively when they got their urinary schistosomiasis. Most of the positive cases were untreated either because there were no drugs for those who sought medical advice at the hospital or because some people went to traditional healers or just never sought medical advice. There is no control program in place.

All the above implies that the health workers should take a leading role in the following:-

- i. Educating the Nchelenge Residents on urinary schistosomiasis, so that they are well informed to teach each other the right information;
- ii Treatment of positive cases using adequate drugs to reduce the sources of infection; and
- iii. Putting a program of control in place to help in control and prevention of cases.

If people continue getting infected without getting treated, a time will come when there will be many cases of bladder neoplasms. The association between the two is undisputed

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSION

This study was aimed at determining the factors contributing to high prevalence of urinary schistosomiasis among the residents of Nchelenge area of Nchelenge District. The study revealed that the high prevalence of urinary Schistosomiasis is due to the following factors:

1. Knowledge;
2. Occupation;
3. Water contact behaviour;
4. Health seeking behaviour;
5. Management of positive cases; and
6. Absence of a program of control.

6.2 RECOMMENDATIONS

1. There is need for the local health authorities to recognise Schistosomiasis as one of the priority problems of public health significance.
2. There is need to educate the Nchelenge residents on Schistosomiasis. At present their knowledge is not for them to protect themselves and to respond positively when faced with the problem of urinary Schistosomiasis.
3. They local health authorities should come up with a way of ensuring that praziquantel is always available to treat cases of Schistosomiasis. Since praziarantel is expensive , consideration should be given to sourcing funds from sources like WHO and other donor agencies.

4. Presently, Lake Mweru is the main source of water for most people so the authorities should consider lessening this dependence by establishing alternative water sources. Wells and boreholes could significantly minimise the lakeside water contact behaviour of the people.
5. A control program should be considered in which provision could be made for free diagnosis and chemotherapy since Nchelenge is a Schistosomiasis endemic area. Community Health Workers might be incorporated in such a program so that they are taught how to diagnose using reagent strips to detect haematuria and thereafter treat the positive cases.
6. A system of data collection should be designed and put in place to keep accurate records on this problem thus ensuring there is no under reporting of the cases.
7. There is urgent need for further research on the aspect of species to determine the contact sites and devise an approach to control snails.
8. Since re-infection rates are generally higher among school children, routine surveillance in schools is highly recommended as appropriate. A school teacher can be trained in health education for Schistosomiasis and the identification of children with infection using the reagent strips.
9. Health education on Schistosomiasis should be routine at antenatal and children's clinics.

RESEARCH PROPOSAL

**A STUDY TO DETERMINE FACTORS
CONTRIBUTING TO HIGH TO PREVALENCE
OF SCHISTOSOMIASIS IN NCHELENGE AREA OF
NCHELENGE DISTRICT.**

RESEARCHER:

ORIENT C. CHIRWA

ADDRESS: UNZA SCHOOL OF MEDICINE
DEPARTMENT OF NURSING
P.O. BOX 50110
LUSAKA

DURATION: EIGHT (8) MONTH

INTRODUCTION

Nchelenge District lies in the Luapula Valley along Lake Mweru. Ngoma (1994) puts the projected population at 127,000. Most of this population is concentrated along the lake's shore.

For Nchelenge, the problem of Schistosomiasis dates many years back as reflected in hospital records. Like any upcoming peri - urban, the district has had its share of public health problems. Five years ago the five priority problems were listed as follows:

1. Malaria;
2. Cholera;
3. Dysentery;
4. Typhoid; and
5. Schistosomiasis.

Today, the local health authorities can boast of having eradicated cholera and dysentery epidemics. Credit must be given to the Ministry of Health who are closely working with the local council by supplying the chlorine for treating the council piped water.

This success story is not true of the now widespread problem of Schistosomiasis. It affects all parts of the district as reflected in the statistics at the Ministry of Health. The problem persists throughout the year with seasonal variations.

Rainfall stimulates the production of young snails. And following heavy rain, extra quantities of faeces are washed into the lake, rivers, lagoons, and streams hatching miracidium that enters the snails. This means more snails get infected and pass on the infection during the period November through March. There is also the tendency for the number of cases to drop as the dry spell sets because not all the eggs hatch into miracidium in dry conditions. Cold weather on the other hand reduces hatching and penetration. Cercariae are transmitted as man is in contact with water.

The direct effects of Schistosomiasis may be underestimated because it runs a long, constant and insidious course. Not only does it affect the physical capacity, but it lowers resistance to other infections, hence producing a marked reduction in productive capacity. Its long term effects include urinary bladder Neoplasms although no direct relationship has been as yet established. According to the Cancer Registry (UTH, 1982), bladder Neoplasms account for 8.5% of all Neoplasms (1045 cases). In a study 86 cases of Bladder Neoplasms, Curriher (1976) found 70% were found with Schistoso or Haematobium ova, thereby indicating the close associations between the two conditions.

The author in her initial Nchelenge experience was alarmed at the number of people who came to the St. Paul's Mission Hospital with Schistosomiasis. At least 5 people were being seen in a day by staff! The statistics at the Ministry of Health do not reflect the actual situation because some people do not come to hospital for medical treatment due varied reasons ranging from lack of money to pay the user fees to simply overlooking the gravity of Schistosomiasis.

It is against this background that I wish to carry out this study to answer the following research questions

1. Why is there a high prevalence of Schistosomiasis in Nchelenge?

- ii. Who are affected most?
- iii. What are the predisposing factors?
- iv. What measures are in place?
- v. How effective are the measures?
- vi. What can be done?

RESEARCH METHODOLOGY

RESEARCH DESIGN

The research study is aimed at determining the factors contributing to the high prevalence of Schistosomiasis in the Nchelenge area of Nchelenge District. A descriptive research design will be used to enable the researcher systematically collect on an account such factors and data that could give a clear picture of the presented factors.

RESEARCH SETTING

The study will be conducted in the Nchelenge area of Nchelenge District. The population characteristics of the area vary considerably ranging from the educated to the illiterate. It follows therefore that lifestyles and health related behaviours vary too.

The choice of Nchelenge for this study is justified because it experiences these problems of Schistosomiasis. Moreover, Nchelenge contributes the highest number of cases to the total for the whole district and Luapula Province as a whole. To crown it all I work in the area and feel greatly indebted to come up with pragmatic solutions that will benefit the whole community.

STUDY POPULATION

The study population will be male and female households living in the Nchelenge area of Nchelenge District. The study units will be heads of households aged from about 18 to 45 years. This age limit is anticipated to comprehend the structured questionnaire of Schistosomiasis - related issues better than those without this age limit.

SAMPLE SIZE

Sample 1 - A total of 60 respondents will be interviewed.

Sampling Method:

A multistage simple random sampling method will be used since the Nchelenge area is large and the people to be interviewed are from various villages within the area. The multistage sampling will be done as follows:

Stage I - Using the simple random sampling lottery technique, symbols of the 10 villages of Nchelenge area will be put in a container, mixed well, and five villages randomly selected.

Stage II - For each of the villages selected, simple random sampling of its sections will be done to select only one.

Stage III - For each of the selected 5 village sections, a simple random

sampling of 12 households will be done to come up with a total of 60 family units. The head of the household will be interviewed if present or the ablest resident adult.

The main advantage of using this sampling method is that a sampling frame of all the individual units is not required for the total population. This method also gives each household an equal or non-zero chance of being included in the sample.

Sample 2 Will consist of all the health workers in the outpatient departments of Nchelenge District and St. Paul's Mission Hospitals. This convenient sample will be used because of the limited number of individual units who total about 10.

DATA COLLECTION INSTRUMENTS

The data will be collected using a primary source with the following instruments:

1. Self administered questionnaire, and
2. Structured interview using standardised questionnaire.

The self administered questionnaire will be administered to health workers since they are literate. It will have both pre-determined and open - ended questions. For clients who are illiterate the structured interview will be used and the interviewer will have to translate all the questions into vernacular.

DATA COLLECTION

Will be over a period of two weeks

PILOT STUDY

Was conducted in Kalikiliki Compound of Lusaka that has similar conditions to the Nchelenge area in question. Five self administered questionnaires were given to health workers at Mtendere clinic and 5 structured interviews were conducted at Kalikiliki compound. This enabled the researcher to evaluate the clarity of the questions and rephrasing of the questions was done where need arose.



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Department of Post Basic Nursing
P.O. Box 50110
Lusaka, Zambia

Your Ref:

r Ref:

20th August 1996

The District Director of Health
Ministry of Health
Box 740064
LUSAKA

[Signature]
u.f.s. Head - Post Basic Nursing

Dear Sir,

re: RESEARCH STUDY

I am a fourth (4th) year student at the School of Medicine, Department of Post Basic. As part of my study, I am required to submit a research study. My topic is "A Study to Determine Factors Contributing to High Prevalence of Schistosomiasis in Nchelenge area of Nchelenge District.

I would be grateful if I would be allowed to administer questionnaires and conduct interviews with the help of research assistants. This will enable me to collect the information required for the study.

The findings will be used to make some recommendations to the Health Authorities on how to solve the problem.

Your favourable response to my request will be greatly appreciated.

Yours faithfully,

Orient Chimalilo Chirwa

THE UNIVERSITY OF CAMBRIA
SCHOOL OF MEDICINE

DEPARTMENT OF POST BASIC NURSING

25th March, 1996

The Director,
Tropical Diseases Research Centre

Dear Sir/Madam,

This is to introduce... **ORIENT CHIMALILO**.....
a Fourth Year BScH student in the School of Medicine, Department of
Post Basic Nursing. The student is carrying out a Research study in
partial fulfillment of the Degree requirement. The name of the Research
Topic is... **A Study to determine factors contributing**
to high prevalence of Schistosomiasis in
Kashikiship, Nuneke District

We shall be most grateful if you could access the student to
information on the subject, clients or interviewees and any other assistance
the student may require.

Yours faithfully,

Patricia M. Ndele

Patricia M. Ndele (Mrs)
ACTING HEAD/RESEARCH L TURER

THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE

DEPARTMENT OF POST BASIC NURSING

25th March, 1996

National Council for Scientific
Research
LUSAKA

Dear Sir/Madam,

This is to introduce... **ORIENT CILIMALILLO**
a Fourth Year BScN student in the School of Medicine, Department of
Post Basic Nursing. The student is carrying out a Research study in
partial fulfillment of the Degree requirement. The name of the Research
Topic is.....
.....

We shall be most grateful if you could access the student to
information on the subject, clients or interviews and any other assistance
the student may require.

Yours faithfully,



Patricia M. Ndele

Patricia M. Ndele (Mrs)
ACTING HEAD/RESEARCH SUPERVISOR

**QUESTIONNAIRE FOR HEALTH WORKERS TO
DETERMINE FACTORS CONTRIBUTING TO HIGH
PREVELANCE OF SCHISTOSOMIASIS IN NCHELENGE
AREA OF NCHELENGE DISTRICT.**

INSTRUCTIONS

1. Please do not indicate name on the form.
2. Write responses by ticking in the box provided.
3. For questions with no boxes, write the response on the space provided.
4. Do not write in the space written 'For Official Use Only.'
5. Answer all questions.

Questionnaire Number:.....

SECTION A-BACKGROUND INFORMATION

- 1 Job title:.....
- 2 Date of qualification:.....
- 3 Length of service at your hospital:.....

**For Official
Use Only**

SECTION B-QUESTIONS ON THE AVAILABILITY OF RESOURCES

- 4 Do you see cases of schistosomias at your hospital?

1. Yes

2. No

- 5 If you do, how many cases do you see in a day?.....

- 6 How do you diagnose cases of schistomiasis?

1. Laboratory Investigation

2. History from the patient

3. Signs and symptoms

4. Any other. Specify

- 7 Describe the availability of drugs to treat schistomiasis .

1. Always available

2. Sometimes available

3. Not available most times

4. Never available

8 What do you advise patients when drugs are not available?

.....

.....

.....

9 Is schistosomiasis a problem in your area?

1. Yes

2. No

10 If yes to question 9, is there a program to control schistosomiasis in your area?

1. Yes

2. No

11 In your own words what do you think should be done to control the problem of schistosomiasis in your area?

.....

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.....

**QUESTIONNAIRE FOR DATA COLLECTION
ON FACTORS CONTRIBUTING TO HIGH
PREVELENCE OF SCHISTOMIASIS IN NCHELENGE
AREA OF NCHELENGE DISTRICT.**

INSTRUCTIONS

1. Please do not indicate name of respondent on the form.
2. Write responses by ticking in the box provided .
3. For questions with no boxes, write the responses on the space provided.
4. Answer all questions.
5. Do not write in the space marked 'For Official Use Only.'

Questionnaire Number:.....

SECTION A - BACKGROUND INFORMATION**FOR OFFICIAL
USE ONLY**

1 Date of interview:

2 Sex:

1. Male

2. Female

3 Age:

4 Marital Status:

1. Single

2. Married

3. Divorced

4. Separated

5. Widowed

5 Level of Education:

1. None

2. Primary

3. Secondary

4. College

5. University

6. Any other specify:

.....

6 Occupation:

7 Type of housing:

1. Brick with iron roofing
2. Brick with thatched roofing
3. Village hut
4. Adobe block with thatched roofing
5. Any other. Specify:

--

8 Type of toilet facility

1. Pit latrine
2. Water closet
3. VIP
4. Any other. Specify:

--

9 If no toilet facility, what do you use?

1. Neighbour's
2. Bush
3. Lake shore
4. Any other. Specify

--

10 Where do you get water for drinking?

1. Lake
2. Well
3. Tap
4. River
5. Any other. Specify:

--

11 Where do you get wate for washing your body?

1. ~~Lake~~

2. Well

3. Tap

4. River

5. Any other. Specify:

.....
-

12 Where do you wash yourself?

1. At the lake side

2. At the river

3. In a shower

4. In a bath tub

5. In a pit latrine

6. In a booth from a bucket/basin

7. Any other: Specify:

.....
-

13 Where do you wash your clothes?

1. Lake

2. Well

3. Tap

4. River

5. Any other. Specify:

.....
-

14 Do you swim in the lake?

1. Yes

2. No
-

15 Do you go fishing on the lake?

1. Yes

2. No
-

SECTION B-QUESTIONS ON KNOWLEDGE

FOR

OFFICIAL
USE ONLY

16 Do you know the disease called bilharzia?

1. Yes

2. No

--

17. If yes to question 16, what is bilharzia?

.....

.....

.....

--

18 How can one get bilharzia?

.....

.....

.....

--

19 How can you know that one is suffering from bilharzia?

.....

.....

.....

--

20 Is bilharzia a serious disease?

1. Yes

2. No

--

21 Give reasons for your answer to Question 20.

.....

.....

.....

.....

--

22 Is bilharzia a problem in your area ?

1. Yes

2. No

--

23 Can bilharzia be treated?

1. Yes

2. No

--

24 Where did you get your information on bilharzia?

1. Friends

2. Health workers

3. Radio

4. Printed literature

5. Any other. Specify

.....

--

SECTION C - QUESTIONS ON HEALTH SEEKING BEHAVIOUR

25 Have you ever suffered from bilharzia?

1. Yes

2. No

--

26 If yes to question 25, how many times have you suffered from bilharzia in the last years?

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27 Where did you go for medical advice?

1. Hospital

2. Traditional healer

3. Self medication

4. Any others:

--

28 Were you given medicine?

1. Yes

2. No

3. Not applicable

--

29 How soon did you receive medical advice?

1. Immediately

2. After some time

3. Didn't seek medical advice

4. Any other. Specify:

--

30 If you were given medicine, were you completely cured?

1. Yes

2. No

3. Not applicable

--

31 If you were not given medicine, what were the reasons for not being given?

.....

.....

.....

--

32 Were you given any health education on bilharzia at the hospital?

1. Yes

2. No

--

33 If yes to question 32, what were you told about the disease?

--