A STUDY ON MALARIA CONTROL MEASURES AMONG COMMUNITY MEMBERS IN LUSAKA URBAN

BY

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STATEMENT

This dissertation is genuine work of **GEORGE SIKAZWE**, carried out in three (3) residential areas of Lusaka urban namely; Kanyama, Libala and Olympia.

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DEDICATION

This study is dedicated to my family, Betty, Kulu, Duba Mimi and Chawe. May you keep the supportive spirit.

DECLARATION

I declare that the work presented in this dissertation for the Masters degree in Public Health is my own work and has not previously been submitted at this or any other institution.

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APPROVAL

This dissertation of George Sikazwe is approved in partial fulfillment of the requirements for the award of the Masters degree in Public Health by the University of Zambia.

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LIST OF ABBREVIATIONS

AAAS	-	American Association for the Advancement of Science
BS	-	Blood Slide
CBoH	-	Central Board of Health
CSO	-	Central Statistical Office
DHMT	-	District Health Management Team
DHS	-	Demographic Health Survey
GDP	-	Gross Domestic Product
GNDP	-	Gross National Domestic Product
ITN	-	Insecticide Treated Net
NMCC	-	National Malaria Control Centre
RBM	-	Roll Back Malaria
UNICEF	-	United Nations Children's Fund
SPSS	-	Statistical Package for Social Sciences
WHO	-	World Health Organization

ABSTRACT

Malaria is an illness caused by plasmodium of the *falciparum, malariae, vivax* and *ovale* species. 90% to 95% of the malaria cases occurring in Zambia are due to *plasmodium falciparum*. The malaria parasites are transmitted by the vector mosquito. The important malaria vectors in Zambia are *Anopheles gamibiae, anopheles Arabiensis* and *Anopheles funestus*, all these are fresh water breeders (Bransby – Williams, 1979).

Approximately 500 million cases occur worldwide per year. 90% of these happen in Sub-Saharan Africa. On the Zambian scene, the disease has been identified as one of the leading cause of both morbidity and mortality. By 1999 the incidence rate for malaria was 308.4 per 1,000 people. While the fatality rate among those admitted to health centres and hospitals was 51.3 per 1,000. Malaria has also been documented as the most common cause of both outpatient attendance and hospital admission in all age groups. Figures for 1999 show that 35.1% of total health centre admissions were due to malaria. The disease affects all age groups but is mot serious among younger children and pregnant women.

It has been suggested that community involvement and their full participation would provide a solution to bringing the vexing problem down. The questions therefore are, what does the community know about malaria prevention and control? What is the community actually doing to malaria? And what is the potential of the community to participate and contribute to the malaria control programme? This study aims at answering these questions in other

words it aims at assessing the knowledge attitudes and practices in malaria control measures among community members.

To initiate a community based programme it is necessary to have adequate and focused information regarding the community visa-a-vis the given problem. Hence this study would be useful in the planning and implementation of partnership based malaria control activities. The study would be useful especially now when there is new vigour to control malaria under the Roll Back Malaria initiative.

This was a cross sectional survey targeting randomly sampled household. The sample was drawn from 3 residential clusters.

(a) Low cost high density

(b) Medium cost medium density and;

(c) High cost low density areas

A representative sample of 10% of the households was drawn from the three residential areas. Specifically the areas were Olympia, Libala Stage II and Old Kanyama.

The major findings were that people generally found definitions of things like what is malaria or what is malaria prevention, cumbersome. However upon probing they came up with more or less the correct answers. It was also found that people in Lusaka urban appreciated the severity of malaria (69%) as well as recognized the importance of taking preventive measures (61%) (However practice of control measures were low at 48% $x^2=3.2$, $P < 0.05$).

What could be near a fresh finding is the discovery of a very strong association of high temperature and fever to malaria. 55% of the respondents across the education strata and residential areas defined as high temperature and fever. On the other hand clinicians also heavily rely on temperature and fever to diagnose the disease. The argument that arises is could there be an exaggeration in our estimation of malaria incidence in view of the fact that high temperature and fever could be brought about by a myriad of other causes?

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Malaria is an illness caused in man by infection with protozoa of the genus plasmodium. There are four human plasmodia namely *falciparum, ovale,* malariae and *vivax.* In Zambia about 90% to 95% of the malaria cases are due to the malignant *plasmodium falciparum.* The name malaria came about as a mistaken belief by European explorers who associated it with bad air i.e. mal meaning bad and aria meaning air.

MACLEOD J. (1984) defined malaria as an infection, which may be acquired wherever there are human hosts carrying the parasites and a sufficiency of suitable anophelene mosquitoes together with conditions of temperature and humidity that favour the development of the parasite in the mosquito. It may also be transmitted by transfusion or inoculation of infected blood and rarely transplacentally.

The disease presents itself mainly by symptoms of generalized body aches, headache, vomiting, nausea, chills, malaise and fever. Hence the disease is very difficult to differentiate from other infectious diseases. Once it gains entry the plasmodium finds its way into the blood stream destroying red blood cells.

1.1.1 THE VECTOR

The *plasmodium* is transmitted from one person to another by mosquitoes of the anopheles species. The two most notorious are the *anopheles gambie* and *anopheles funestus*. These vectors breed in fresh water bodies such as ponds, ditches, dambos, holes, road gullies and agricultural fields.

Globally almost 500 million cases of acute malaria per year are reported. The disease is also responsible for about 3000 deaths each day resulting in at least 1,000,000 deaths per year. Sub-Saharan Africa accounts for about 90% of the world's malaria cases (WHO, 1998).

1.1.2 CONTROL MEASURES

The problem of malaria could be brought under control with the combination of some or all of the following measures:

(a) **Chemotherapy and Chemoprophylaxis:** This involves the use of drugs that eliminate the malaria parasite in the human body. The destruction of the plasmodia also reduces the morbidity and mortality of the disease among humans (Dave, 1972). Chemoprophilaxis has a disadvantage in that it is costly both in terms of the cost of the drug and the administration of the drug. Until a year ago the most widely used drug has been chloroquine in Zambia. Plans are being implemented to put in place effective medicines to replace the once dependable chloroquine to which resistance by the malaria parasite has been confirmed widely. Currently chemoprophylaxis is confined to

pregnant women and is being given as intermittent presumptive treatment (IPT) (WHO, 1998).

(b) **Destruction of the Vector:** This involves the elimination of the vector mosquito as well as the mosquito larva and eggs. The commonest way of achieving this is through the use of insecticides and larvicides to destroy the mosquitoes and larvae respectively. The use of insecticides in the destruction of malaria vectors is a very effective method of malaria control. Its disadvantage is the high cost of chemicals and the high operation cost of executing spraying programmes. This method of malaria control proved very effective during the economically vibrant years of the 1960s right through to the early 70s. During this period, two rounds of spraying were undertaken annually with a resultant effect of low malaria transmission. This effort was so successful especially in the urban areas that the disease was a notifiable disease in the urban areas. The economic down turn of the Zambian economy following the falling price of copper resulted in the abandoning of effective spraying campaigns. This demise was not helped by the international ban on DDT use. The ban on the use of this affordable and effective chemical in the early 80s meant an almost abandonment of spraying against the malaria vectors.

(c) **Biological control:** This involves the use fish most notably Gambusia fish to feed on mosquito larva. This has been a considerable measure in East Africa. This method has a big advantage in that it is

environment friendly and relatively cheaper. The method also has a big potential of sustainability in that once the fish is introduced in a body of water it will multiply by itself and maintain itself. From such a school of fish seed fish could be got to introduce to other bodies of water. The disadvantages of this method include its limited utility due to the general inadequate knowledge on aquaculture by most people. Scientific knowledge is also scanty on this method and probably there is need for more research and its dissemination to make this method more readily available.

(d) **Environmental Management:** This refers to the whole range of activities and practices that should be observed and carried out in order to minimize or at its best create an environment where mosquitoes cannot breed and thrive. These include conscious removal of all standing water where mosquitoes might breed, clearing bushes and tall grass around dwelling areas, careful construction of roads, dams, farms and canals so that mosquito breeding is minimized. These practices are fundamental and have a potential of reducing malaria. The disadvantage is in their applicability. Carrying out these measures are not only costly but also requires conscious effort on the part of farmers and contractors on one hand and an effective monitoring system by both the central and local governments on the other. Such capacity does not exist.

(e) **Blocking of Contact between People and Mosquitoes:** This involves putting in place effective barriers between the mosquitoes and the potential bite victim. The most renowned method is the use of the insecticide treated mosquito net [ITN]. The major strengths of this method are that ITNs, are at once capable of protecting individuals from lethal bites as well as killing vector mosquitoes. The ITNs are also capable of killing other vermin such as bedbugs. The other advantage is its applicability. The method is individual based and is relatively easy to adopt, once adopted the use of the net could be life long. The cost of the method is also very relatively cheap. The major disadvantage is the lack of the culture to use nets in Zambia. The lack of this culture sometimes is translated into cost implications ie the communities cannot afford the ITNs. However this could not be true in the light of heavy subsidies that the Malaria Control Partnerships have put in place. A recent study shows that an average head of the Zambian household spends an average of K20,000 in a week which is more than the cost of an ITN (NMCC 2002).

(f) **Repellents and protective clothing:** This is a useful measure among campers and people that are forced by circumstances to stay outdoors. However it has little practical use as a long term measure. (Dave, et al).

1.1.3 PREVIOUS EFFORTS OF MALARIA CONTROL

Malaria is an ancient disease and the battle against it began as far back as 1955 when the Eighth World Health Assembly endorsed a World Wide Programme of Malaria eradication. This endorsement saw the World Health Organisation (WHO) taking over coordination and provision of technical assistance. This global effort achieved some success. Endemic malaria was eliminated from Europe, parts of Asia, and the Middle East, Japan, Taiwan, Australia, America, North of Mexico and most of the Caribbean (Stevens, 1987).

Malaria eradication was achieved mostly in developed temperate countries. In 1970, it became apparent that worldwide eradication, especially in the tropics was not achievable. The eradication strategy was watered down to "Control Strategy", which implies the reduction of the disease to a level at which it is no longer an important public health problem. However, the control strategy could not be sustained. The shrinking economies of the third World and the resultant poverty worked to reverse the malaria programme achievements. This was compounded by the ban of the use of DDT, which effectively cut spraying against mosquitoes. This was made worse by the development of resistance of the parasite to chloroquine, which had been an affordable, and wonder drug against malaria. For Zambia by 1979 malaria had become a serious public health problem.

1.1.4 THE CURRENT STRATEGEM

The battle against malaria is again taking an aggressive turn. In 1998, the Roll Back Malaria (RBM) was set in motion. Roll Back Malaria is a global partnership aimed at halving the worlds' malaria by the year 2010. It was founded by the governments of malaria-affected countries, the World Health Organisation (WHO). The United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF) and the World Bank.

RBM has six elements namely:

(a) *Evidence-based-decisions using surveillance, appropriate responses* and building community awareness.

(b) Rapid diagnosis and treatment

(c) Multiple prevention-better multi-prolonged protection using insecticide-treated mosquito nets, environmental management to control mosquitoes and making pregnancies safer.

(d) Focused research to develop new medicines vaccines and insecticides and to help epidemiological and operations activities

(e) Coordinated action for strengthening existing health services, policies and providing technical support.

(f) Harmonized actions to build a dynamic global movement.

[WHO 1998].

1.1.5 THE ZAMBIAN PICTURE

Malaria is endemic countrywide and confirmed as the leading cause of both morbidity and mortality. Malaria is listed first among the top six health problems on almost all the District Health Management Team (DHMT) plans.

This disease is the most common cause of both outpatient attendance and hospital admission in all age groups. The disease is most dangerous in younger children and pregnant women.

1.1.6 THE LUSAKA PICTURE

Lusaka urban is situated at the centre of Lusaka Province, its boundaries stand at 360 square kilometers. It is the core of business activity and government functions in the country. Lusaka urban is characterized by a high population growth rate as a result of natural population growth as well as unprecedented levels of immigration into the city. The population is estimated to be above 2 million.

The recent high levels of immigration into the capital could be explained by the collapsed copper industry, which has made the Copperbelt less attractive to the adventurous bright light seekers from both the Copperbelt itself and the impoverished countryside. Hence all the roads lead to Lusaka as the old saying goes.

The rapid population rise in Lusaka urban, like in most cosmopolitan cities in Africa has filled the town far beyond capacity; the city is simply tearing at the seams due to tremendous pressure exerted on its limited resources, infrastructure and services. This has brought numerous health problems such as inadequate housing, insufficient water supply and sanitation facilities, as well as inadequate health facilities.

Coming to the disease patterns, Lusaka Urban District Health Board (LUDHB) records malaria as the first most prevalent disease. In 1998 it afflicted about 2,920 under fives and about 3,332 above fives in three quarters i.e. January to August. These are very conservative figures bearing in mind that some malaria patients did not report to the Health Centres as they did not seek any treatment from there or they were treated at home or in private health facilities or indeed the University Teaching Hospital (UTH). These hence, could not be captured by the LUDHB information system.

The LUDHB asserts that malaria remains the leading cause of morbidity in Lusaka District. They further state that figures for 1997 and the first three quarters of 1998 show that the incidence of malaria both in time and space rangers between 38 and 43% (LUDHB, 1998).

From the foregoing it is logical to state that malaria is a serious public health problem in Lusaka.

1.2 STATEMENT OF THE PROBLEM

Malaria is endemic both in urban and rural areas. It is documented as the most common cause of out –patient attendance and hospital admission in all age groups in the country. Statistics have shown an increase in the incidence of malaria over the years. For 1976 malaria incidence rate was computed as 121.5 per 1000 people. For the year 1999 the incidence rate was reported at 308.4 per 1000 people. This indicates that the problem of malaria has trebled during the 23 years. Statistics also show that the malaria proportional rates

computed out of total health attendance stood at 10.2% in 1976 but doubled to 21% in 1992. Similarly the proportion of total hospital admissions due to malaria has also been on the increase, in 1976 the proportion was 8.8%, in 1992 it was 19.6% while in 1999 the proportion was as high as 35.1%.

As if this is not enough malaria case fatality has also been on the increase [case fatality is a reflection of factors such as the severity of the malaria case when it is brought in hospital, the resistance of the plasmodia to anti malarial drugs and the adequacy of hospital care]. NMCC 1999.

Malaria is a major contributing factor to high rates of maternal and infant mortality in the country. Malaria adds to the already existing anaemia during pregnancy. Anaemia leads to low birth weight and premature babies, which eventually ends in infant and maternal death. [NMCC1999]

The World Health Organisation has declared Malaria in pregnancy an emergency, which needs immediate attention. The problem of malaria in pregnancy is a big issue, poor health contributed by malaria especially in the form of anaemia result in maternal death. Fever and high temperature among malaria afflicted pregnant women also has their toll in that they contribute to abortions. This scenario is compounded by inadequate health care. Studies have shown that 80% of the deliveries are done outside the hospital where they are not even attended to by TBAs. As a result of this malaria is regularly resulting in maternal and infant death.

The problem of malaria has an economic dimension. The ever-shrinking economy has brought in its wake drastic cutting in expenditure on social services such as health and education. The cut in the national budget on health meant shortages of essential drugs and chemicals for vector control as well as inadequate staffing in health provision points. Another economy related problem has been the rising poverty in the country, which has brought a rapid rise in ill constructed houses and lack of maintenance and repair of standard houses. Hence it is common to find houses with broken windows and torn sieve screens in the government designated high cost areas. The matter is compounded by the lapse in law enforcement that has inevitably resulted in the rise in numbers of sub standard housing structures. The lack of law enforcement has also resulted in residents not undertaking repair works even for the simplest of all faults especially in institution owned houses.

Besides the above considerations there is the increasing difficulty in the treatment of malaria. This is brought about mainly as a result of resistance to chloroquine. Studies in sentinel sites done by the National Malaria Control Centre and the Tropical Disease Research Centre TDRC show that resistance ranges from as high as 38% to 60 %. This issue is being strongly corrected with the change in the drug policy that puts chloroquine out of the picture and brings in Arthemeter Lumefantrin (coartem) as first line drug and quinine as second line drug. During the interim of phasing out chloroquine and fully bringing in coartem sulphadoxine pyremethamine [SP] will be used. [NMCC 2003]

1.3 RATIONALE

Execution of any strategy can be best done with proper understanding of what is involved. Even after many successes in the field of malaria control it is felt that there is still some need to investigate the attitudes and behaviour of the people towards their perception of malaria. If all would go well the community should have perfected the art of avoiding accumulation of water where mosquitoes breed, people should have known that fever means malaria which would require immediate treatment with an appropriate drug. Realistically people in Zambia would keep their vicinities clean which is primordial for preventing of any communicable disease such as malaria. The biggest question therefore is what went wrong? This study is vital in the sense that its major focus is to find out what is the present perception of malaria among Lusaka urban dwellers and what is contributing to the failure of control measures in the city of Lusaka.

This information would also help in determining the community members' potential and resources of carrying out control measures. Hence a study of this nature may be helpful especially now when there is new vigour to control malaria using broad-based partnership under the Roll Back Malaria (RBM) movement.

1.4 OBJECTIVES

1.4.1 GENERAL OBJECTIVE

To assess the knowledge, attitudes and practices in malaria control measures among community members.

1.4.2 SPECIFIC OBJECTIVES

1. To determine knowledge of malaria control measures in the community
2. To assess community attitude towards malaria control
3. To establish the community's actual practice of control measures
4. To make recommendations to RBM managers and other policy makers

CHAPTER TWO

2.0 LITERATURE REVIEW

The World Health Organization (WHO) adopted the concept of malaria eradication in 1955. This was followed two years later by a global campaign. Zambia in the same period adopted the eradication campaign.

The report of WHO Export Committee on malaria in 1956, stated that malaria eradication of infective cases in a campaign limited in time and carried to such a degree of perfection that when it comes to an end, there is no resumption of malaria transmission.

The initial period of the malaria eradication programme, covered all areas even where there is not much malaria. This contributed to the programme not being feasible. The other reason was that it stressed greater investment of general health services for extension of research on new insecticides (WHO, 1998).

Malaria control until recently has been carried out in campaign fashion in most countries. These campaigns have been aimed at reducing the disease to a prevalence where it is no longer a major public health problem.

There are 3 possible mechanisms by which malaria might be reduced or eliminated. These are:

1. Malaria
2. vector control

3. Malaria eradication

The following list included the most important methods for malaria control.

1. Use of chemicals (insecticides and larvicides)
2. Environmental management
3. Biological control

USE OF CHEMICALS

Insecticides remain the main weapon against disease vectors. It involves the use of chemicals to kill the vectors. In Zambia an integrated approach is used. This includes facilitation and incorporation of simple, cheap, appropriate and self-help methods as an alternative in the absence of chemicals. This has been the utility of bed nets (NMCC, 2000).

As a counter measure against increasing vector resistance to DDT and other chlorinated hydrocarbon, alternative insecticides developed by WHO global programme in 1960. These include new compounds –chlorphoxim perimiphesmethyl (actellic) belonging to organophosphate group, proppoxin (a carbonate) and several pyrethroids. These chemicals had also been incorporated in the residual house spraying campaigns (WHO).

A residual insecticide is one that leaves the insecticide active on the sprayed surface for a considerable length of time after the liquid in which it has been mixed has evaporated. The insecticide is applied uniformly to obtain a complete success. It kills mosquitoes by contact, but requires sometime to act. However, it does not prevent mosquitoes from entering houses and will not entirely eliminate bites.

Environmental Management measures have been in use for many years and have great potential in arresting vector propagation by reducing or eliminating open water surface and vegetation growth.

Increasing efforts have been made especially in large scale water resource development schemes, such as irrigation and hydroelectric projects, for instance at Nakambala Sugar Estates and Kariba North Bank especially in the control of the breeding sites.

Filling ditches, unblocking drainage systems and proper management of dams are some of the most commonly used measures to eliminate or reduce the breeding sources.

Biological Control

Significant progress has recently been made in biological control of disease vectors. The trend was to evaluate and use indigenous fish for mosquito larval control to avoid possible ecological impact.

Biological control involves the introduction into water collections (usually ponds) of fish (gambuisa and panchax) which feed on larvae (Williams, 1982).

Historically, malaria in Zambia consists of two (2) aspects, a rural and an urban part.

In the 1920's when most of the urban centres in Zambia emerged, town and country planners took malaria control into consideration.

As early as 1932, some pieces of legislation were passed regarding malaria prevention and control, which became law in 1944 (Mosquito Extermination Act, 1944).

The malaria control activities cover a wide range. These include research, training, parasitology surveys, residual spraying, mass chemoprophylaxis and field visitations. These activities were however, restricted to five (5) provinces, which includes Southern, Copperbelt, Central, Eastern and Lusaka. This was so because the Government malariologists who also supervised the malaria control programme only existed in the mentioned provinces. Hence coordinated reporting and documentation of malaria control activities in the country only covers the provinces alluded to (MoH, 1999).

Malaria in Zambia is endemic that is in all its nine (9) provinces. Malaria is hyperendemic in hot river valleys with perennial transmission, and hypoendemic urban areas. A survey done in the period 1971-1973 in areas considered malaria epidemiological zones of the country. The crude ratios for all age groups were as follows:

Chipata 17%; Ndola rural 17.2%; Isoka 72.8%; Gwembe 13.4%; Lusaka urban 7.6%; Lusaka rural 39%; and Luangwa district (Lusaka rural) 60.8%.

Malaria has been the most significant health problem in Zambia. As early as 1947, 25% of the total admissions to the European hospitals were malaria admissions whereas African hospitals accounted for 10%.

The cases have been on the increase since then. Records show that in 1947, 500 cases were recorded and by 1998 for instance, the figures skyrocketed to 3,952,122 cases reported to the public health sectors.

The control measures therefore when translated are meant to prevent mortality and reduce mortality and socioeconomic losses due to effects of malaria. Also paramount has been to reduce the transmission of malarial through vector control and where feasible to prevent malaria epidemics.

The malaria parasite *plasmodium falciparum* accounts of almost 95% of malaria parasite in the nation. An epidemiological investigation that was done in 1977 on the Copperbelt found the species to be *plasmodium falciparum*, which is the most deadly (NMCC, 1978).

PROPHYLAXIS

Malaria morbidity level were high and mortality limited to the lower age group due to inadequate immunity. This gave birth to the use of prophylaxis whose aim was to provide continued malaria suppression to prevent the build up of *parasiteamia.*

In this exercise chloroquine was the drug of choice because of its affectivity, safety, cheapness and it is simplicity in administration. Administration of chloroquine was conducted in the rural areas as well as to different sections at risk to malaria such as agriculture projects.

Between 1974 and 1983 for instance chemoprophylaxis using chloroquine was introduced for children through the children's under five clinics and primary schools. In 1980's, the prophylaxis campaigns to suppress and control outbreaks of malaria such as the one conducted in Chiwala area of the Copperbelt had nine (9) nine combined team of the Ministries of Education, Health, WHO staff room from TDRC to conduct the exercise. As a result of this exercise, a positive effect was noted. There was a record of improved daily attendances of the school children in their respective schools. Therefore an adequate supply of antimalarial drug is very essential if desired benefits are to be achieved.

In 1979, there was no outbreak of malaria epidemic because the supply of chloroquine remained good for the control programme. There was a 3.0% decrease in clinical malaria cases and a decrease in microscopial positive cases confirmed on the Copperbelt. Common complaints such as headache, stomach pains and others were usually absent. Generally, the health of the population had surely been better than the previous years. A decrease in the total of re-attendants in all the health centres was also noted by 1980.

Chemophylaxis has time and again been hampered by the scarcity of the chloroquine drug. The exercise could not for instance be carried out at the four (4) medical units of the rural areas of the Copperbelt due to shortages of chloroquine in 1980.

Residual Spraying and Laviciding

Local authorities and the mining townships had drainage schemes and larviciding programmes very much to their hearts and realized that residual spraying was a more efficient and cheap answer to malaria control. This activity was mainly so in the urban areas on the Copperbelt.

The mining conglomerate in the Copperbelt towns continued with the DDT spraying programmes especially in areas where their employees resided. The malaria cases that occurred in these areas therefore were infections contracted outside the towns. The risk of contracting the disease within the larger townships was very minimal (MoH, 1998).

The Malaria Vector Control Programme in Zambia is largely governed by the Mosquito Extermination Act, 1964. The Act however, does not include the rural areas in its vector control initiatives. The Act also stipulates that the urban centres be covered 100% with two (2) rounds of residual insecticide application every year (CAP. 557, 1964). In this regard, reports show that spleen rates were lowest in urban areas and were high in the rural school children and children attending rural hospitals.

Insecticidal coverage at various development projects were done. The Luswishi Rural Reconstruction located in the highly malarious area was such one area attended to in 1980.

In 1979, the Copperbelt Province has 180 villages sprayed with insecticide. The parasite rated ranged from 2.4% to 6.2% mainly due to good control

measures which were practiced by the mining health authorities (NMCC, 1999).

With the abandoning of the DDT worldwide by the World Health Organisation (WHO), the residual spraying programme was ill effected. In the same period, in the 1970's when the ban was effected, Zambia was experiencing an economic crumble. In 1971 for example, the residual spraying programme was only 70% of the previous years coverage. Local authorities, under whose jurisdiction malaria eradication fell, were facing critical financial constraints, which led to the discontinuation of a number of public services. The withdraw of WHO from the malaria eradication campaign dealt the final blow to the programme.

The net of these events was reprioritizing of local government expenditure, often resulting in budget cuts in most departments including health, directly affecting the spraying programme, redeployment of spraymen to other functions, or laying them off altogether.

The ban of DDT also meant a switch to newer and expensive insecticide. Only the Mining Conglomerate in the Copperbelt continued with the spraying programme. However, with the slump in the copper prices on the world market and a steep rise in the petroleum products in the 1970's coupled with lack of technical support, the mines started facing difficulties in the spraying programme during the second part of the 1980's. Eventually the programme ceased in 1991 with the heavy cuts in their health budgets. This marked the re-invasion of Zambian urban centres by malaria (WHO, 1992.)

INSECTICIDE TREATED NETS (ITNs)

The strategy then was to implement community application of selective vector control approaches, such as Insecticide Treated Nets (ITNs). This is one of the most effective methods of preventing malaria and it is also very cost effective. In Zambia the National RBM Strategy aims to take ITN coverage to scale nationwide (UNICEF, 1999).

The National Malaria Programme estimates that the poorest 60% of the population would benefit from community distribution methods with subsides which maintain the ITN cost at not more than 1 US dollar per net.

An integral approach is recommended for a measurable impact in malarial control. These include chemical control (including ITNs) and environmental control (modification) of the physical environment (NMCC, 2000).

Small scale ITN projects in Zambia have demonstrated the viability of the community based approach in rural areas with ITN sales and net re-treatment. The ITN programme in Zambia thus far is a path finder for a series of activities including community led environment management of breeding sites and indoor residual spraying.

SUMMARY

In summary it has been released as early as the 1950's that malaria is a serious public health problem that should be tackled in a well planned and coordinated manner. The World Health Organization took over the coordination of malaria control in 1957 (Dave, et al). This was coupled with

provision of technical assistance (Stevenson, et al). This early drive against malaria resulted in elimination of malaria in some wealthy temperate or subtropical countries. Indeed this spirited fight also resulted in "fruitful" or rather visible control in the tropics. However the exercise was very involving and costly. An America Association for the Advancement of Science (AAAS) publication aptly says:

"Malaria is a complex problem for which there is no "magic bullet" no quick or easy solution particularly in Africa where approximately 80 to 85 percent of cases and 90% of deaths in the world due to malaria occur"

This exercise revolved around the use of DDT for spraying against the vector and utility of chloroquine to eliminate the plasmodium. There were also education campaigns for mobilizing people to take measures to control malaria. There was also the use of the law to reinforce good practices for malaria.

In Zambia the combination of the above methods saw a reduction in the prevalence of malaria. This was during the period of 1940 to 1970. During this time urban areas did not experience much malaria. Indeed malaria was then a notifiable disease (NMCC, 1999).

This bright picture took a drastic change in 1970 following the falling copper prices and the resultant fall in the DNDP, and GDP. The ensuing poverty marked the beginning of the fall of the malaria control campaign. The economic inadequacy of the national budget entailed reduction in expenditure

on social services such as health and education. In the health sector this resulted in low staffing levels and poorly paid staff, during and chemical shortages, poor road infrastructure impinging on poor referrals, lack of vehicles etc.

Low staffing levels meant less staff to spearhead the various health programmes including malaria. Low morale among these workers also dwelt a blow to the malaria campaign in that the zeal to work and initiative were lacking.

As the economy of the country continued its nose dive there came a point, this was in the early 90's when the government could not afford such basics as essential medicines in its health institutions. The shortage included vital medicines like chloroquine. Lack of chloroquine needless to say has a big impact on malaria incidence and prevalence (MoH, 1998).

Poor road infrastructure and lack of vehicles and such other related logistics as a result of a collapsed economy made referrals for complicated malaria more difficult this contributed to higher mortality rates especially among pregnant women and young children (CBoH, 1997). Besides the economy related factors several others are documented to have contributed to the current malaria invasion.

The ban of DDT sometime in the late 70's and Zambia's inability to replace it with another insecticide compounded by massive resistance of chloroquine brought about a resurgence of malaria. Other factors were economical

depreciation on, massive ecological destruction and an increase of illegal settlements and construction which facilitated regular breeding sites for mosquitoes. This occurred both in rural and urban areas.

These include:

- **Phasing out of vertical programmes to create integrated structures**

The argument here has been that by dismantling vertical programmes such as the malaria control programme, concentration on malaria was lot and inadequate attention was given to the problem.

- **Resistance to DDT by the mosquito and the ban on the use of the chemical**

DDT was a wonder chemical during the early days of the malaria fight. The chemical was used to spray dwelling houses. There was in place a standing programme of spraying every household at least twice a year. This yielded a lot of success in the elimination of the vector. DDT was also very affordable. Since its ban regular residual spraying has almost ceased in the country. The main reason is that the current insecticides are well beyond the budget of nationwide spray programme.

- **Resistance to Chloroquine by the Parasite**

In recent times the plasmodia has developed resistance to the widely used and affordable chloroquine. This has entailed many cases of malaria going untreated as well as higher fatality rates.

- **None enforcement of law and legislation on malaria**

Shortly after independence law enforcement and legislation on malaria such as cap 535 which stipulates standard to be followed regards environmental health were ignored. If not ignored they were distorted in the pursuit of political expedience. The case in point is the declaration that households can grow maize in dwelling yards in order to contribute to food security.

However, there is also the bright side to this long catalogue of woes. To start with the DHMTs in the country have all identified the magnitude of the malaria problem. This is important as it forms the first step in the control and prevention of the disease. Furthermore, the high prioritizing of malaria and the numerous actions put across in the district plans on the issue may indicate that there is commitment to deal with the disease. The Ministry of Health and the Central Board of Health (CBoH) are also very committed in the control and prevention of malaria. The CBoH has provided comprehensive technical guidelines and standards on malaria (CBoH, 1997).

Another source of inspiration is the fact that there are a number of projects operating on the ground in some districts such as Samfya, supported by UNICEF, Chipata, Chama and Lundazi support by USAID. These are working towards the provision and promotion of use of impregnated treated mosquito nets (ITN) etc (UNICEF, 1998).

The biggest hope is the Roll Back Malaria initiative. RBM is in essence a movement that aims at bringing everybody on board in the control of malaria. This collaborated effort also aims at tapping the resources and relative

advantages of the various partners towards malaria control. RBM has started gathering momentum from the highest offices (Presidents) in malaria affected countries down to partners in the capitals and down to the grassroots (WHO, 1999).

CHAPTER THREE

3.0 METHODOLOGY

The study utilized both qualitative and quantitative methods. For the qualitative we used six (6) focus group discussions i.e two in each of the sampled areas. For the quantitative part we did a cross section survey and sampled 406 households in total and to these we administered a questionnaire.

3.1 SAMPLING PROCEDURES

We clustered the 93 residential areas in Lusaka urban into 3 broad clusters. These where (a) high cost low density. (b) medium cost medium density and (c) low cost high density residential areas. After this we conducted a simple random procedure and picked one residential area from each of the three categories. Thereafter we did a systematic random sampling procedure using the Central Statistics Office [CSO] household figures and demarcated Census Standard Areas [CSAs] and Standard Enumeration Areas [SEAs] to select a representative sample of households. The randomisation at this stage evolved around picking every tenth household in the sampled residential areas.

3.2 ***SAMPLE SIZE***

The sample size was arrived at using the following formula.

$$N = \frac{z^2 pq}{d^2} \qquad nf = \frac{1 + n}{\frac{n}{N}}$$

z^2 being 95% confidence level

d being the error level

pq being the maximum outcome assumed.

nf being sample size with the target population in mind.

N being target population

Therefore $n = \frac{(1.96)^2 \, 50 \times 50}{(5)^2}$

384

LIBALA

$$nf \quad \frac{384}{1 + \frac{384}{122}} = \frac{384}{4} = \mathbf{96}$$

OLYMPIA

$$nf \quad \frac{384}{1 + \frac{384}{93}} = \frac{384}{5} = \mathbf{77}$$

OLD KANYAMA

$$Nf = \frac{384}{1 + \frac{384}{500}} = \frac{384}{1.7} = \mathbf{225}$$

N = **398**

3.3 STUDY SETTING

The study was conducted in 3 residential areas of Lusaka Urban. These were Libala, Olympia and Old Kanyama. Old Kanyama represents a typical shanty compound with a high population density and low economical status. This slum has poor housing, and poor sanitation and water supply. This is compounded by the ever present standing pools of water as a result of poor drainage system and the existence of a high underground water table.

We also had Libala stage 1. This is a medium cost and medium density residential area. Libala has standard houses which are well arranged in neat rows and nice flowers and hedges giving the visitor a peace of mind that all is well.

Lastly we got our sample from Olympia, this is a high class residential area with apparent opulence such as big nicely kept mansions and nice flower lined roads. Olympia is a low density and high cost residential area in the middle of Lusaka.

The variables that were considered are:

(a) Malaria case identification and management.

(b) Malaria prevention such as vector control, larvae and the mosquito, Environmental management, use of repellents, protective clothing and Impregnated Treated Nets [ITN].

(c) Perception of malaria as a problem

(d) Action to prevent malaria

(e) Potential to contribute time and materials towards malaria control

(f) Perception of what the community thinks it should do to prevent malaria.

The study of the above variables would help clarify existing knowledge gaps on case identification and management of malaria. It would also establish knowledge on malaria control measures. It would also show what actions communities are currently doing to control malaria. Furthermore, it would also illuminate on what potential exists in the communities towards participation in malaria control activities.

3.4 DATA COLLECTION TECHNICQUES

The main survey was done by administering a structured interview schedule with both open and close ended questions among sampled heads of household. Six (6) focus group discussions were also done in each of the sampled residential areas.

3.5 PLAN FOR DATA PROCESSING AND ANALYSIS

The data was cleaned to ensure completeness and consistency thereafter it was entered into the computer, SPSS Software was used to process and analyse the data.

3.6 ETHICAL CONSIDERATIONS

Approval was obtained from the University of Zambia, Research Ethics Committee. Permission was also sought from the Lusaka DHMB and other relevant authorities. We also obtained consent from respondents in the community. The respondents were assured of confidentiality and none persecution arising from their responses.

3.7 STUDY LIMITATIONS

The ideal situation would have been to collect data from all the dwelling compounds in Lusaka. Time, logistics and financial limitations could not permit this.

3.8 STAFFING AND WORK PLAN

5 research Assistants were recruited to assist in Data Collection. These were trained to equip them with the skills and knowledge needed during the exercise.

The senior members during the exercise included the supervisor and co-supervisors who provided technical guidance and ensured the smooth running of the study. Technical input was sought from a competent statistician to provide the needed competency in data processing and analysis.

CHAPTER FOUR

ANALYSIS AND PRESENTATION OF DATA

4.0 DEMOGRAPHIC DATA

Quantitative data was collected from heads of 406 households in Olympia (22%); Kanyama (56%) and Libala (22%). The sexual distribution was men 44% and women 56%. The apparent differences is probably due to the fact that the men were more likely to be breadwinners and therefore were out of homes more often than women.

Qualitative data was collected through FGD's. Each area has 2 FGDs. One comprised of women and the other of men. The age range of respondents was 15 to 55. This was to make them similar to those interviewed in the quantitative part.

A large portion of the interviewees have had secondary education (40%) while 26% have had College or University education. 23% had primary education while 8% had no formal education.

Distribution by employment as student 8%, formal employment 32% and self employed 60%.

The majority of the respondents were Christians of Protestants orientation 61% and Catholics 31%. Non-religious heads of household were 6% while Muslims were 2%.

4.1 EXISTING KNOWLEDGE OF MALARIA

Most of the respondents were taken aback when asked what malaria was (Table 1)

Table 1: Description of Malaria

Total	No education 33(8.1%)	Primary education 97 (23.9%)	Secondary Education 166 (40.9%)	College/ university 110 (27.1%)	Total 406 (100%)
Disease caused by mosquito	3 (9.1%)	15 (15.5%)	70 (42.2%)	85 (77.3%)	173 (42.6%)
High temperature, vomiting and fever headache	8 (24.2%)	22 (22.7%)	36 (21.7%)	9 (8.2%)	75 (18.1%)
Do not know	17 (51.5)	39 (40.2%)	24 (14.4%)	2 (1.8%)	82 (20.2%)
Other	5 (15.2%)	21 (21.6%)	36 (21.7%)	14 (12.7%)	76 (18.7%)

Upon probing however, 43% of the respondents described malaria as a disease caused by mosquitoes. The others went giving a comprehensive catalogue of signs and symptoms of malaria (18%). The other observation on this variable is the relationship between levels of education and knowing correctly what malaria is. Upon grouping either the respondents knew or did not know what malaria is, a significant association was observed between education level and knowledge of malaria (x^2 = 77.28, p< 0.001). Knowledge level for malaria linearly increased with educational level attained (x^2 for trend = 73.40, p< 0.001) from 39% in respondents without education to 98% in college/university graduates.

Malaria is heavily seen as fever and high temperature. Both those with highest (63%) and lowest level of education (58%) held this notion (Table 2).

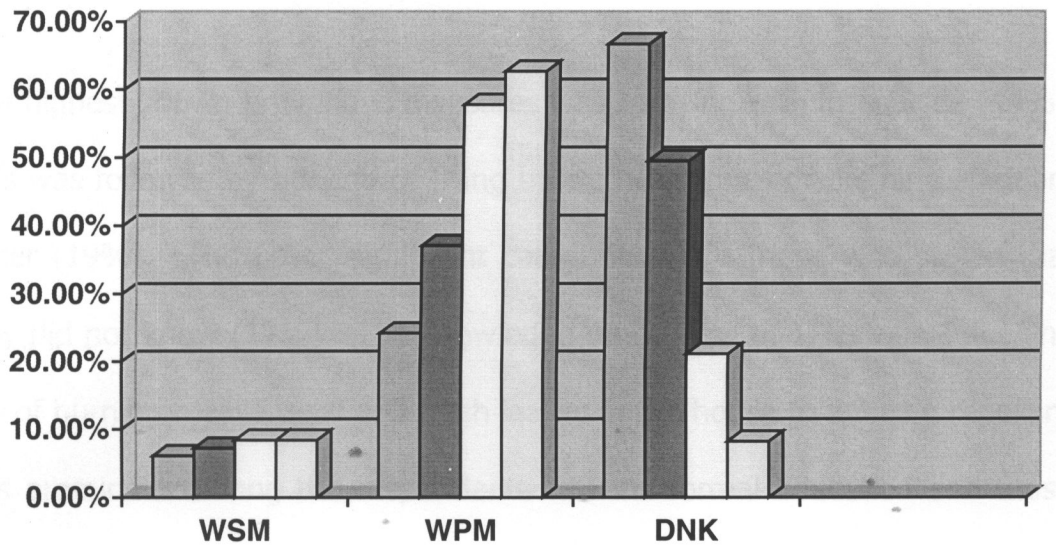
Table 2: How one tells that a person is suffering from Malaria

Sign of malaria	No education	Primary	Secondary	College/ university	Total
Totals	**33**	**97**	**166**	**110**	**406**
High temperature, vomiting and fever headache	7 (21.2%)	11 (11.3%)	21 (12.6%)	9 (8.2%)	48 (11.8)
Headache	4 (12.1%)	19 (19.6%)	30 (18.1%)	15 (13.6%)	68 (16.7)
Fever and high temperature,	19 (57.6%)	48 (49.5%)	86 (51.8%)	69 (62.7%)	222 (54.7%)
Headache and fever	3 (9.1%)	16 (16.5%)	23 (13.9%)	15 (13.6%)	57 (14.1%)
Paleness/yellow eyes	-	3 (3.1%)	6 (3.6%)	2 (1.8%)	11 (2.7%)

The next variable was what action they took after recognizing malaria in himself or herself or household member. The majority (81%) of the respondents said they took the malaria victim or themselves to a health centre. The next grouping was self-medication at 18%. A paltry (0.7%) gave vague answers one of which was *"Lesa eutusunga"* (It is God who keeps us).

Asked what malaria prevention is, some respondents said malaria prevention was "ways of stopping malaria" (9%). The highest score was "ways of preventing malaria" (51%). A good proportion of the respondents stated that they "did not know" (28%). Vague uncodable answers accounted for 11%, e.g. *isa munshita, tapali ifyo mwingachita nganinshita yaiko* (malaria is timely there is nothing you can do when it is time to be struck).

Figure 1: Graphical presentation of people's perceptions of malaria prevention



Key: WSM – Ways of stopping malaria; WPM – Ways of preventing malaria; DNK – Do not know.

Note: Each group of the four bars represents No Education, Primary education, Secondary education and College or University education respectively.

There was a significant relationship between knowledge of malaria prevention measures and education. ($x^2 = 62.47$, $p < 0.001$) as shown in Figure 1. The response corresponded to level of education. Respondents with no formal education (67%) and those with primary education only (50%), largely fell in the "Do not know category".

Meanwhile, those with secondary education (66%) or College/University (71%) stated that malaria prevention is ways of stopping or preventing malaria.

The highest known preventive measures was spraying with insecticide (44%). This was followed by burying or filling up ditches, ponds or draining stagnant water (19%). The other significant categories were those who stated that they did not know (17%). The knowledge on the use of ITNs was 6%. The use of burning mealie meal and fresh leaves in the house to act as a repellant was prominent among the respondents with no formal education and those with primary education (4%) and it was confined to the slum residential area of Kanyama.

Knowledge of elimination of mosquito larva was again on the high side, 33% indicated removing stagnant water, while 21% stated pouring diesel and used oil on stagnant water. A portion of 16% did not know while 11% threw a wrong card that you would control by aerol spraying.

The filter on how they would specifically protect themselves against mosquito bites revealed a high score on mosquito net use at 32%, (Table 3).

TABLE 3: PERSONAL PROTECTION AGAINST MOSQUITO BITES

Protective measure	Number	%
Using mosquito coil	19	4.7
Sleeping under mosquito net	131	32.3
Spraying with insecticide	51	12.6
Closing windows/ doors in time	22	5.4
Cutting/slashing grass	3	7.0
Apply repellant	73	18.0
Burning mealie meal / leaves	8	2.0
Do not know	16	3.9
Other	83	20.4

4.2 PERCEPTION OF MALARIA AS A PROBLEM

Altogether, 80% of the respondents perceived malaria as a problem in Lusaka urban. Responding to a preset nominal scale, 53% described malaria as a very serious problem, 30% described malaria as serious. The remaining 17% said malaria was not a serious problem.

Most of the households had experienced bouts of malaria in the last 12 months, 74%. The remaining 26% of the respondents indicated not having had a bout of malaria.

Despite their perception of malaria being a serious problem as well as the documented fact that it is a very prevalent problem, most of the respondents believed that malaria was preventable, 87%. The other 12% thought otherwise.

4.3 WHAT HOUSEHOLDS ARE ACTUALLY DOING TO PREVENT MALARIA

Almost 98% of the respondents felt it was worthwhile to make preventive measures against the malaria scourge. Further asked whether they do spare a thought on malaria prevention, 85% said yes while 2% gave a non-committal "somehow". Then 13% categorically said they never thought of malaria control.

Overall, 49% of the respondents did not take any measures to control/prevent malaria (Table 4).

TABLE 4: MEASURES ACTUALLY TAKEN TO CONTROL/PREVENT MALARIA

Protective measure	**Residence**			**Total**
	Kanyama n (%)	Libala n (%)	Olympia n (%)	**n (%)**
Using mosquito coil	7 (3.1)	0 (0)	0 (0)	7 (1.7)
Sleeping under mosquito net	27 (12)	5 (6)	6 (6.9)	38 (9.6)
Spraying with insecticide	14 (6.2)	23 (27.7)	24 (27.9)	61 (15.4)
Closing windows/ doors in time	8 (3.5)	3 (3.6)	1 (1.1)	12 (3)
Taking antimalarial drugs	28 (12.4)	10 (12)	14 (16.2)	52 (13.1)
Burning mealie meal and fresh leaves	5 (2.2)	0 (0)	0 (0)	5 (1.2)
Burying/filling up ditches, ponds, removing stagnant water	15 (6.6)	7 (2.3)	2 (2.3)	24 (6)
None	121 (53.7)	35 (45.3)	39 (45.3)	195 (49.4)
TOTAL	**225 (100)**	**96 (100)**	**86 (100)**	**394 (100)**

Going by residence and starting with Kanyama many people did not consciously practice malaria control, 54%. This residential area significantly indicated some use of mosquito nets 12% used medicine as protective measure.

Libala, the medium density area also had a high number of no practice response (45%). The use of insecticide was relatively high (28%). The use of leaves and burning mealie meal was not practiced nor was using mosquito coil.

Even in Olympia the non-practicing rate was high (49%). Traditional use of green leaves and burning of mealie meal was not practiced. The proportion or "Target" spray was high (15%).

4.4 HOUSEHOLDS POTENTIAL TO CONTRIBUTE TIME AND MATERIALS TO MALARIA CONTROL

Asked whether they would volunteer their time on malaria control, 89% said "yes" and 10% said "no". Quizzed as to whether they would be willing to contribute 10% of their earnings on malaria control, over half (56%) of the respondents were affirmative (Table 5).

TABLE 5: WILLINGNESS TO CONTRIBUTE 10% OF EARNINGS TO MALARIA CONTROL

Willingness to contribute 10%	Number	
Yes	226	55.7
No	156	38.4
It depends on whether a small token is given or not	19	4.7
Never	5	1.2

When asked whether they would lend tools for malaria control, the response was an overwhelming "yes" (94%). The rest said "no" (6%). The major reasons for offering this help was 'because we need to fight against malaria". Those who could not lend this help justified their position thus (a) "Because malaria cannot be controlled" 1% and (b) "Because government is irresponsible for malaria control". 8%. Specifically asked whether they would be willing to participate in the Roll Back Malaria (RBM) partnership over 90% said "yes" and of course 10% said "no". The reasons for not being willing to be part of the partnership included: No time too busy, (4%); No time for non paying job, (1%); It is government responsibility, (3%).

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

The study show that people in Lusaka urban are very familiar with malaria they are able to give a comprehensive list of signs and symptoms of the disease. Another significant discovery on this variable is the overwhelming association of malaria to high temperature and fever. It appeared like malaria is high temperature and fever. The thing to note is that high temperature and fever could be brought about by other causes such as infections or even poisoning. This raises the question "if all high temperature/fever cases are taken as malaria when in fact they are not", are we exaggerating the high prevalence of malaria? Exploration of this is way beyond the scope of this study, but probably it should be taken up. This is in view of the fact that most of the health provision facilities do not have laboratory facilities and entirely depend on clinical diagnosis, which in turn heavily depends on temperature taking and fever considerations. To summarise this argument:

Is it true that malaria is the highest cause of all outpatient attendance and hospital admissions in the country?

From the presented data it is clear that the general population in Lusaka urban despite their education level, economic status or indeed their residential area find definitions such as *what is malaria prevention* cumbersome. However upon probing they tend to come up with right answers. These answers weighed heavily towards the earlier practices of

malaria control which emphasized, clearing of surroundings, spraying and draining of stagnant water. These activities have currently not been highly favoured due to the following reasons; (a) mosquitoes do not bread in grass or maize (b) spraying is too expensive and definitely not feasible and (c) draining of water could be unrealistic in some instances such as village on an island. There is need therefore to send a second waive of information to update communities accordingly.

The majority of the people in Lusaka urban consider malaria as a serious problem. The disease had struck more than once many of the household in the six months. This appreciation should be used as the entry point towards malaria control. The people could be mobilised easily since malaria is almost a tangible and visible problem. A real problem that spares very few households.

Despite this appreciation, the study reveals a low level of practice of malaria control measures.

KNOWLEDGE OF MALARIA PREVENTIVE MEASURES

True to what arose during the pretest of the questionnaire, the question "in your view what is malaria prevention" was a difficult one to most of the respondents. It became clear that the concept in its pure form was not an every day thing and that malaria prevention per se was not at the finger tips of the respondents. Hence to draw a response required patience and some level of probing.

The majority of the households both in affluent and poverty stricken residences seem to have accepted the fate of malaria. The vain attempts at malaria control are scanty and mostly aimed at controlling mosquito bites and not the bigger picture of malaria.

The study has shown that there exists is great potential among the households of Lusaka urban to control malaria. There are indications that most of the households are willing to contribute resources towards malaria control.

To a large extent the respondents were willing to contribute finances, tools as well as time. Hence people responsible for malaria control such as the managers for partnerships like the Roll Back Malaria Movement could be advised that they have a very effective ally in the community members. Ideas arising from interviews with health providers and selected community members were mostly in line with the statistical findings particularly on the assertion that malaria is considered as a leading public health problem. They confirmed that it is not mere statistics but a reality that malaria brings a lot of people to health facilities as well as causes the highest number of admissions. They were quick to point out that the perceived view of this study that we could be exaggerating malaria incidence due to fever and temperature diagnosis by both clinicians and community members could not be true. They suggested that probably the assertion might be worth thinking about. Their position was that the picture somehow balanced itself very slowly to the true picture in that some high temperature and fever victims never reported to the

health facilities. Their other point was that "any way most of these fever and high temperature cases turn out to be malaria upon microscopy". However this researcher is of the view that this could be a big sweeping statement that needs scientific enquiry to substantiate.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

From the foregoing there are indications that a lot needs to be done in the control of malaria. The mere fact that the disease has trebled in the last ten years calls for stepped up efforts in tackling the problem. The malaria control programme should mobilise resources to put in place a combination of measures that should work in unison to bring the problem down. Hence the current scaled up exercise of ITN use should be accompanied by control measures such as Indoor Residual Spraying [IRS] and environmental management measures such as control of breeding sites as well as prevention of the creation of breeding sites during farming, construction and irrigation activities. Similarly the implementation of the new treatment policy, which has a combined drug of Coartem [containing Arthemeter and Lumefantrin] as first line drug, should be implemented without delay.

It is also clear that a lot of work need to be done by malaria control programmes in updating the knowledge on malaria control and management. Besides this there is also a need to ensure that people put into practice this knowledge. These processes could turn out to be easy to implement because people appreciate the severity of malaria. Furthermore the findings of this study show that people to a large extent are willing to volunteer to work on malaria control programmes as well as contribute resources.

What therefore remains to be done is putting in place a strategic programme to mobilise community members to work on malaria control and management. Probably the Roll Back Malaria partnership might be an effective vehicle for attaining these aspirations.

6.2 RECOMMENDATIONS

1. The health sector should carry out massive education campaigns involving all the stakeholders and utilising all possible channels of communication to teach about malaria management and prevention. The teaching should be tailored to update the people with the newer and effective methods of malaria control such as the use of the insecticide treated mosquito nets. The communication campaign should be designed in such a way that it does not end at awareness building but go up to the ultimate, which is behaviour change.

2. The Ministry of Health should carry out appropriate studies to determine the real levels of malaria prevalence in the country. This is to take care of both over reporting as result of wrong clinical diagnosis and under reporting arising mainly as a result on non attendance of malaria victims at health institutions.

3. The Roll Back Malaria social partnership should consider the community members as the most important and powerful ally in the fight to roll back malaria. The RBM committees across the country should work

out ways of effectively mobilising people to contribute to and participate in the control of malaria.

4. The malaria control programme should work towards scaling up IRS and other environmental control measures. This should be done with the same energy and vigour that has characterised the promotion of ITN use in the country.

5. Finally the programme should pursue to the end the improvement of malaria treatment by making available the combined drug of coartem in the health institutions belonging to both government and the private sector. Effort should also be made to ensure that the community members are empowered to do correct treatment on their own as envisioned by the World Health Organization.

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QUESTIONNAIRE

STRUCTURED INTERVIEW SCHEDULE FOR HEADS OF HOUSEHOLDS

IN MALARIA CONTROL MEASURES

INSTRUCTIONS

1. Answer all questions
2. Tick or circle the correct answers where they are provided
3. Write answers for the other questions in the spaces provided

SECTION A: DEMOGRAPHIC DATA

1. Age of respondents_____

2. Marital status

   1. Single
   2. Married
   3. Separated
   4. Divorced
   5. Widowed

3. Level of education

   1. No formal education
   2. Primary
   3. Secondary
   4. College/University

4. Occupation

   1. Student
   2. Self employed
   3. Employed

5. Income

   1. Less than K100,000
   2. K 100,000 – K 500,000
   3. K 500,000 and more

6. Religion

   1. Catholic
   2. Protestant
   3. Muslim
   4. Other

SECTION B: EXISTING KNOWLEDGE OF THE MALARIA DISEASE

7. What is malaria?

   _____
   _____

8. How would you tell that a person is suffering from malaria?

   _____
   _____

9. What do you normally do if you or member of household develops what you perceive as malaria?

   _____
   _____

SECTION C: KNOWLEDGE OF PREVENTION MEASURES

10. In your view is malaria prevention?

    _____
    _____

11. List the malaria prevention measures that you know.

    _____
    _____

12. How do you eliminate mosquitoes?

_____
_____

13. How do you eliminate mosquito larva?

_____
_____

14. What measures can you use as personal protection against mosquito bites?

_____
_____

15. Mosquitoes breed and survive in the environment around us. What measures would you take to prevent this?

_____
_____

SECTION D: WHAT THEY FEEL ABOUT MALARIA AS A PROBLEM

16. Would you describe malaria as a problem in your household?

    1. Yes
    2. No

17. If yes, tick level of seriousness

    1. Very serious
    2. Serious
    3. Slightly serious

18. Roughly how many bonus of malaria did you experience as a household in the last 2 months?

_____

_____

19. Have experienced loss of life as a result of malaria in this household/

    1. Yes

    2. No

20. In your view is malaria preventable?

    1. Yes

    2. No

21. Roughly how much does it cost to have you or other members of your family treated for malaria?

_____

_____

SECTION E: WHAT HOUSEHOLDS ARE ACTUALLY DOING TO PREVENT MALARIA

22. Would you consider it worthwhile to take preventive measures against malaria?

    1. Yes

    2. No

23. List the measures that you are currently doing to prevent malaria?

_____

_____

SECTION F: HOUSEHOLD POTENTIAL TO COTNRIBUTE TIME AND MATERIALS TOWARDS MALARIA CONTROL

24. Given the pressures of existence in Zambia today would spare a thought about malaria control?

_____

_____

25. If asked to volunteer your time to malaria control activities would you agree?

    a. Yes

    b. No

26. If requested to contribute 10% of your earnings towards malaria control what would be your response?

_____

_____

27. If called upon to lend you hoe, shovel of basins for malaria control would you consent?

    a. Yes

    b. No

28. For either answer give reasons.

_____

_____

29. There is a programme coming to control malaria, everybody is strongly welcome to play a part. Are you willing to participate in the voluntary work?

    a. Yes

    b. No

30. If 'No', give reasons why?

_____

_____

31. If yes, state what kind of contribution you would offer.

_____

_____

The University of Zambia
School of Medicine
Department of Community Medicine
P. O. Box 50110
LUSAKA

6th June 2000

The Director
Lusaka DHMT
P.O Box 50827
LUSAKA

u.f.s Head
Department of Community Medicine
UNZA
LUSAKA

Dear Sir/Madam.

Re: PERMISSION TO CARRY OUT A STUDY

I am a study undertaking a master's degree in Public Health at the University of Zambia. One of the requirements for this programme is to carry out a research study.

I hereby seek permission to carry out a study in your district on malaria prevention practices among community members.

I would be grateful if I could be allowed to carry out the study. I intend to base my study in Kanyama, Olympia and Libala compounds.

During the study we shall interview households as well as health providers in the health delivery facilities of the said areas.

Thanking you in advance.

Yours sincerely,

G. Sikazwe
MPH STUDENT