MUHIMBILI UNIVERSITY COLLEGE OF

HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

UTILIZATION OF DISCOUNT VOUCHERS IN PURCHASING INSECTICIDE TREATED NETS AMONG WOMEN WHO ATTENDED REPRODUCTIVE AND CHILD HEALTH CLINICS IN MOROGORO RURAL DISTRICT

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF DAR ES SALAAM

SEPTEMBER 2005

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es Salaam a dissertation entitled: **Utilization of discount vouchers in purchasing insecticide treated nets among women who attended reproductive and child health clinics in Morogoro Rural District,** presented in partial fulfillment of the requirements of the Master of Public Health.

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Date: 11.11.05

DECLARATION

I, Jane Margareth Kahabi, declare that this dissertation is my own original work, and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Candidate's name: JANE MARGARETH KAHABI, (MD,RUSSIA).

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I say thank you very much.

DEDICATION

I dedicate this work to my son Sivert and daughter Neema

ABSTRACT

Introduction:

Malaria has been the main cause of morbidity and mortality in Tanzania, hence ITN intervention has to be considered in reducing the burden of this disease. The discount Voucher Scheme has been operated at a very small scale in Tanzania, thus, there is a need to produce empirical evidence with which to assess the true potential demand of Discount Vouchers.

A descriptive cross sectional study was undertaken in Morogoro Rural District during the month of May and June 2005. The main objectives was to determine the extent of utilization of Discount Voucher in purchasing Insecticide treated nets among women who attended Reproductive and Child Health Clinics. A total of 250 women aged 15 years and above were selected using multistage sampling technique. A semi structured questionnaire was used for data collection after having oral informed consent.

Among the 177 women who had received discount Vouchers, when asked if they had slept under a net the previous night, 121(68.3%) responded affirmatively.

This suggests that there was good utilization of ITN among the women who purchased the ITNs. Overall 77% of women reported that they utilized them to protect themselves and their children from mosquitoes. The main factors that had positively influenced the purchase of ITNs was the awareness of women on the

importance of protecting themselves and their families from malaria and having a reliable source of income. The main negative factor was the low purchasing power of most of the families, as shown by the fact that petty business women were more likely to purchase an ITN compared to women having other types of occupations.

The results revealed that there was a high demand of ITNs than the vendor could supply. The study also revealed that there were limited vendors and MCH clinic in the neighbourhood.

The study recommends that more effort should be made to increase awareness of the community to enable more women with their children to purchase and utilize the ITNs by using DV. Finally Discount Voucher Scheme implementers need to provide mobile services to reduce shortage of ITNs in rural areas.

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ABBREVIATIONS/ACRONYMS

AMMP	-	Adult Mortality and Morbidity project
DHMT	-	District Health Management Teams
DPT-HB_3	-	Diptheria Pertusis Tetanus – Hepatitis B
DSS	-	Demographic surveillance survey
DV	-	Discount Voucher
DVS	-	Discount Voucher Scheme
GFTAM	-	Global Fund to Fight Tuberculosis, AIDS and Malaria
IHRDC	-	Ifakara Health Development Research Centre
ITNs	-	Insecticide Treated Nets
KINET	-	Kilombero Insecticide Treated Nets Project
LLITNS	-	Long Lasting Insecticide Treated Nets
MCH	-	Maternal and Child Health
MOH	-	Ministry of Health
NMCP	-	National Malaria Control Programme
PSI	-	Population Services International
RCH	-	Reproductive and Child Health
SMITN	-	Social Marketing of Insecticide Treated Nets
WHO	-	World Health Organization
TNVS	-	Tanzania National Voucher Scheme

CHAPTER ONE

1.0. INTRODUCTION:

1.1. Background

Malaria is identified as a major threat to global health in the coming decades. Despite many attempts to eradicate or control malaria, the disease still threatens about 40% of the world's population whereby 300-500 million cases occur every year, (Trigg and Kondrachine, 1998).

The disease is estimated to cause between 1.1- 2.7 million deaths each year (RBM, 2002; WHO, 2000). The vast majority of malaria cases (90%) are in Sub-Saharan Africa, where malaria constitutes 10% of the total diseases burden. Children under five years and pregnant women are most at risk with *Plasmodium falciparum* being "the main cause of severe malaria and death" (TDR/WHO, 2002; RBM/WHO, 2000).

In Tanzania, malaria severely affects the most vulnerable groups, that is children under the age of five and pregnant women. It is the leading cause of mortality and morbidity, particularly in children under 5 years of age. It is estimated that 14 – 15 million malaria cases occur every year (MoH, 2000).Over 30 percent of hospital attendances are due to malaria(MoH, 2002). More than 100,000 malaria related deaths are reported annually of which 70,000 – 80,000 are children under 5 years of age (MOH, 1999). Several strategies to control malaria are in place, including promotion of Insecticide Treated Nets (ITNs).

Studies conducted in Africa and other places in developing world have shown that Insecticide Treated Nets (ITNs), and other Insecticide Treated Materials (ITMs), provide significant protection against malaria in many environmental and epidemiological situations (Magesa et al., 1991; Lyimo et al., 1991; Premji et al., 1995; Lengeler et al., 1996).

In Tanzania for instance, studies have shown that ITNs reduce child mortality by 25-30%, parasitemia by 60% and malaria related anaemia by 50% respectively (Premji et al., 1995, Abdullah et al., 2001).

In Tanzania the Ministry of Health (MoH) has developed a five year National Malaria Medium Term Strategic Plan from 2002 – 2007, which builds on earlier efforts to control the disease. The major goal is to reduce mortality and morbidity due to malaria in all the 21 regions of the mainland by 25% by the year 2007 and by 50% by the year 2010 (MoH, 2002). The major strategies include improved Malaria case management, vector control through the use of Insecticide Treated Nets (ITNs), prevention of malaria in pregnancy, and epidemic preparedness, prevention and control of malaria (MoH, 2002). The strategic plan is supported by operational research, promotion of positive health practices among communities, and monitoring and evaluation.

Mosquito bed nets are widely available in the country, currently it is estimated that 40% of all Tanzanians use some kind of mosquito net (MoH 2002). However, ITNs are rare. It is also estimated that only about 11% children of

under five years of age and 8% of pregnant mothers (the vulnerable groups) use ITNs in the country, (MoH, 2002).

During the last decade Insecticide-Treated Nets have become a key strategy for malaria control. Social marketing is an appealing tool for getting such nets to poor rural communities who are most afflicted by malaria. This approach usually involves subsidized prices to make nets and insecticides more affordable; and helps to create demand (Mushi et al., 2003).

In the early 1980s the use of ITNs in Tanzania was relatively rare and the few nets available were expensive as they were sold at US $.10-15 each (Hanson and Worral, 2002). In 1990s home treatment kits were developed, simplifying the treatment process and transferring the responsibility to individual net users. In 1994 the first sales of the "Mbu" net by a commercial manufacturer Sunflag were observed. These nets were sold at a factory price of US $ 4.25 and retail price of US $ 7.00 and approximately 250,000 nets were sold per year (Hanson and Worral, 2002).

In 1997 Population Services International (PSI) was contracted by the (Ministry of Health (MoH) and started to market and promote ITNs in four districts. Later, in the same year a local textile manufacturer known by the name of A to Z, was encouraged to begin manufacturing nets. Currently, (MoH 2002) sales of Sunflag nets had reached 450,000 per year. In 1998, a third manufacturer, TMTL, entered

the net market. The effect of commercial sector competition was to reduce prices whilst increasing quality and availability of nets. (MoH 2002)

Tanzania has become a centre for ITNs manufacturing in Africa, with a current production capacity of more than 5 million nets per year, of which more than 1.9 million are sold in Tanzania, while the rest are exported to other countries in Africa and beyond (MOH 2002). The factory price of ITNs has now dropped to below US $ 3.00 and the retail price is around US $ 3.50 depending on the size and type of net. Several technologies for the manufacture of Long-Lasting Insecticide Treated Nets (LLITNs), which do not require re-treatment with insecticides during their expected normal life-span, are under development (Malaria Consortium, 2003). A-Z is currently producing Long Lasting Insecticide Nets (LLITNs), which will be marketed at local and international markets. (MoH 2002)

With a Grant from the Global Fund to Fight Tuberculosis, AIDS and Malaria (GFTAM), the Tanzania National Voucher Scheme (TNVS) was officially launched in October, 2004. The TNVS is a Public-Private partnership that enables pregnant women to obtain an ITN at a greatly reduced price. It also provides Insecticide re-treatment kits to children under the age of one year at no cost when these children attend clinic at their vaccination visits for DPT-HB 3 and measles.

Discount Vouchers are given to pregnant women when attending a Reproductive and Child Health (RCH) clinic for antenatal care to be redeemed at a local vendor in partial payment for an ITN. Each voucher is worth T Shs.2,750/= (US $ 2.75). The ITNs vendors redeem the vouchers at a nearby redemption agent. A pilot scheme for Discount Vouchers was implemented in Kibaha and Kilosa districts in 2003 the scheme provided lessons and experiences that were necessary to incorporate during the expansion into a national-wide programme (Nsimba, 2003)

Previous studies have not given sufficient information to address this problem. The involvement of women will increase women's participation and awareness in decision making is therefore central to effective interventions. Therefore, an inquiry to explore the utilization of DV in Purchasing ITNs among women is necessary for prevention of malaria and forms the basis for this study.

1.2. Statement of the problem

For many years malaria has been the main cause of morbidity and mortality in Tanzania. More than 28 million Tanzanians are living in a malaria endemic area, and are at risk of being infected from malaria parasites all year around (IHDRC, 2001).

There has been considerable debate on how best to deliver Insecticide Treated Nets (ITNs), to reach the most vulnerable groups for malaria, so as to result into a sustainable impact on the ever-increasing burden of the disease.

The importance of an ITN intervention is to reduce the morbidity and mortality due to mosquito bites and consequently malaria. To have an impact there has to be a demand for and use of the nets. Hence factors that affect demand for ITNs have to be known before the intervention is in place. (Mujinja, 2002).

Lack of consumers, economic intervention on demand for ITNs has contributed to fragmented mechanisms of selling nets to consumers (IHRDC, 2001) and hence district interventions in Tanzania have not been able to document economic reasons for a slow demand in ITNs. Furthermore, demand for ITNs has remained low in some districts where ITNs have been sold despite high by expressed needs by various communities (Mujinja, 2002).

With very few exceptions, most Discount Voucher Scheme (DVS) have operated at a small scale, with limited geographic coverage. There is at present very

limited experience with use of Discount Vouchers for public health activities, and there is no evidence elsewhere on their wide scale use. There is a need to produce empirical evidence with which to assess the true potential demand of Discount Vouchers.

In some cases, vouchers distributed are not used (MoH, 2003). The subsidies provided might not give a sufficient incentive to attract a net purchase because there may be cultural barriers to service use, or transport costs may affect redemption. In other cases, even if vouchers are successfully distributed to the disadvantaged groups, there is no guarantee that the vouchers will be used by the targeted group. People may not believe that the voucher will really entitle them to subsidized services. If a black market develops, some may even sell their voucher to someone better of.

1.5. Research questions

This study intends to focus on the following

- To what extent are women with children below one year able to utilize of Discount Voucher in purchasing Insecticide Treated Nets (ITNs)?
- What are the perceptions of women on the importance of ITNs for prevention of malaria after receiving a Discount Voucher?
- How does the utilization of Discount voucher in purchasing ITNs vary by socio-economic, demographic and geographic characteristics?

1.3. Rationale of the study

Discount Vouchers provide an opportunity for women and their families to obtain Insecticide Treated Nets (ITNs) at a greatly reduced price. Lack of understanding of factor: knowledge and behaviour on the utilization of Discount Vouchers in purchasing Insecticide Treated Nets (ITNs) might contribute to the failure of control programmes against malaria.

The results of this study could be used as a base for designing malaria control intervention social marketing messages and net selling strategies in rural area where purchasing is low.

1.4. Objectives of the study

1.4.1. Broad objective

The Broad objective of this study was to assess the utilization of Discount Voucher in Purchasing Insecticide Treated Nets among women who attended reproductive and child health clinics in Morogoro Rural district.

1.4.2. Specific objective

1. To determine the proportion of women who were able to utilize Discount voucher in purchasing ITNs
2. To explore the perceptions of women with children below one year on the importance of ITNs for prevention of malaria after receiving a Discount Voucher
3. To determine the coverage of utilization of ITNs by women and their families after receiving Discount Voucher

CHAPTER TWO

2.0. Literature review

2.1. Global burden of malaria

Malaria is ranked by WHO and the World Bank as one of the leading cause of mortality in developing countries. In any given year, it is estimated about ten percent of the global population will suffer from malaria; estimated at 300-500 million clinical cases annually, and more than one million will die as a result the majority of whom are in the African region (World Bank, 1993; WHO, 2000).

In high malaria transmission areas, children and pregnant women have the highest morbidity and mortality rates. Plasmodium falciparum is the major cause of malaria related deaths (WHO, 1990; Marsh, 1992). Malaria infection in humans is caused by one of the four Plasmodium species: falciparum, malariae. ovale and vivax, Plasmodium falciparum is the most common of all the species accounting for more than 90% of infections in the tropics and subtropics and causing the most severe forms of the disease. Malaria transmitted through a bite of an infected female anopheline mosquito while feeding on human blood.

The uncomplicated form of malaria is mainly responsible for febrile illness. Without proper and prompt actions it may progress to severe/complicated forms of malaria with fatal results (Snow et al., 1994). Intervention studies have shown that early treatment of malaria in children (Greenwood et al., 1988; Alonso et al., 1991) and the use of insecticide Treated Nets (ITNs), (WHO, 1993b) may reduce overall mortality and morbidity. This means that malaria contributes to mortality

both directly and indirectly by its relation to deaths from other causes (Snow and Marsh, 1998; Greenwood, 1999). Thus, an effective malaria control programme must be seen as an integral component of all child health Programmes in any malaria endemic country (Greenwood, 1997).

Malaria interferes with productivity and economic well–being, it consumes time from health family members who must provide care for the sick. Apart from the consequences of the disease to individuals, households and communities, malaria treatments impose additional economic burdens on most rural populations, hence complicating the fight to alleviate poverty (Mujinja, 2002).

The situation is made worse by the fact that malaria has become resistant to more affordable antimalarial drugs. The new drugs recommended to treat malaria in sub- Sahara Africa are expensive and sometimes unavailable (Trigg and Kandrachine, 1998). Thus malaria and poverty are interrelated; countries with severe malaria are poor and continue to have low economic growth. Therefore, the estimated impact of malaria on the economy is very large.

The Demographic Surveillance System (DSS) data published from Morogoro Rural District, Dar es Salaam and Hai District shows that Malaria is a leading cause at adult morbidity and that there is a substantial number of deaths happen at home (AMMP, 1997), and are not reflected in health facilities statistics. Pregnant women and under fives are the most vulnerable groups and most at risk of being infected by Plasmodium Falciparum, the predominant Malaria parasite species in

Tanzania that accounts for more than 90% of infections (Kilama and Kihamia, 1991).

2.2. Malaria control strategies

The malaria eradication efforts in the 1950 and the 1960s, which were followed by a reorientation towards the control of the diseases, have been largely unsuccessful, for several reasons which include financial, technical and operational constraints. These include the development of resistance to the existing antimalarial drugs and insecticides. (Nsimba, 2003).

In 1980s malaria situation worse this led the World Health Organization (WHO) to develop a new Global Malaria Control strategy in full partnership with health Workers from Malaria endemic countries (WHO 1993).

In 1992, WHO organised a ministerial conference on malaria control in Amsterdam to endorse the Global Malaria Control strategy. In contrast to earlier malaria eradication campaigns, the global strategy realized that malaria control problem varied from country to country, from area to area and even between different groups within the population. Thus, it was agreed that control efforts must be adopted according to the local situations if they are to succeed (WHO, 1993).

In 1990 the National Malaria Control Programme, in collaboration with multilateral and bilateral organizations, tried to revive Malaria Control Activities.

Guidelines on control and re-treatment, and the National Malaria Strategic Plan, which are currently in place: Emphasizing prompt treatment and control of mosquito bites using nets (especially Insecticide Treated Bed Nets), and other relevant control methods. The emphasis of ITNs arises due to the fact that Malaria has undergone resurgence especially with the emergence of drug resistant strains of the parasite. Furthermore, the African Leaders Abuja Declaration targeted at having 60% of pregnant women and children under five years of age (vulnerable groups) sleeping under ITN by the year 2005 (MoH, 2003).

Malaria Control Activities are now under the National Malaria Control Unit, which works under the Department of Preventive Care in the Ministry of Health. The programme has recently prepared a National ITN Programme (MoH, 2000), and at a wider scale, a National Malaria Strategy (MoH, 2002) that in corporate, amongst other things, the scaling at ITNs at a National level.

2.3. Treated net and social marketing of ITNs in Tanzania

ITNs have demonstrated a significant contribution towards both mortality and morbidity reductions in children under five and, more recently, malaria morbidity among pregnant women. ITNs are potentially a public health good but currently, coverage levels are very low, thus public health benefits are not being achieved fully. Governments cannot afford to provide free or even subsidised nets and insecticide for all, and the cost of mosquito nets and insecticide is known to be an important barrier to their purchase and subsequent use in the majority of malaria endemic countries.

Tanzania has a long history into research on insecticide treated nets, firstly through field experiments on the efficacy of net materials, later through small scale ITNs field trials and more recently on the effectiveness of ITNs in a large scale social marketing programme in the Kilombero Insecticide Treated Net (KINET) Project. Results showed a protective efficacy against childhood mortality of 27% in children under five years of age (Abdulla et al., 2001). The study also showed that prevalences of anaemia and parasitaemia in children were reduced too.

A second large social marketing project called the Social Marketing of ITNs (SMITN), run by Population Services International (PSI), has been operating in the country since 1998. In the second phase of the project, expansion occurred into all 114 districts selling mosquito nets at the market price and insecticides at a subsidised price.

The results of a survey carried out at the end of SMITN II (Oct-Dec. 2001) showed that net coverage had not only significantly increased in urban areas to as much as 80% but also in rural areas (50%) where the project had been operating since 1998. Whereas the first place of the project in 1998 observed that there was a sharp gradient in the proportion of households owning a net as socio-economic status increased, by the end of 2002, in the same regions, socio-economic gradients in net ownership had decreased over time (Hanson and Worral, 2002) This shows that as coverage increases, equity improves.

It is widely recognized that the public health sector alone does not have the necessary resources to provide sufficient ITNs to reach the Abuja target of 60% coverage and the private sector has a vital role to play in the production, distribution and sale of ITNs in Africa (Mujinja, 2002).

It is recognized, however, that sectors of the population will never to be able to afford ITNs sold at commercial prices. As a result, several countries are exploring mechanisms for providing targeted subsidies to vulnerable groups in order to increase coverage, whilst maximising equity, primarily through the use of Discount Voucher Schemes.

The ITN (Insecticide Treated Nets) voucher programs implemented in Tanzania and Uganda (Mushi et al., 2003) are among the configurations of Voucher Schemes in health which eventually can be considered as competitive, given the

participation of the public and private sector, although the product is unique, and the price fixed.

Under this program (Mushi et al., 2003) vouchers were distributed to poor pregnant women and mothers of young children who attended an RCH clinic (mission and governmental). In Tanzania each voucher could be used as part-payment of 500 Tanzanian shillings (T.Shs.500= approx $.0.8 in 1997, $.0.7 in 1999) towards the cost of an ITN. The full price of these nets was T.Shs.3,000= ($.4.9 in 1997, $.4.2 in 1999) (MoH, 2003).

The voucher scheme therefore gave a 17% subsidy for a treated net. ITNs were available through a network of private and public sector agents in the area, including shopkeepers, health workers, and village leaders. Each time agents purchased new nets the project reimbursed them T.Shs.500= together with a small handling fee of 50 shillings for each redeemed voucher.

The Discount Voucher Scheme was seen as an integral part of the social marketing project since it offered an excellent opportunity for targeted promotion. In addition to the financial value, the vouchers gave a focus for MCH staff in their health education on malaria prevention with treated nets. Of 8,000 vouchers 7,720 were redeemed.

CHAPTER THREE

3.0. METHODOLOGY

3.1. Study area

3.1.1. Geographical Location

The study was conducted in Morogoro Rural District, which is in the North-Eastern part of Morogoro Region. The current surface area is 19,250 sq. km. and the total population was estimated to be about 524,445. The population density was 31 people per sq. Km.

There are three geographical zones, the mountainous/highlands zone, semi mountainous/lowland zone and savannah zone.

The district is governed by an administrative structure consisting of 10 divisions, 42 wards, 235 registered villages and 1263 sub-villages.

3.1.2. Health Facilities

Health facilities providing health care services in Morogoro Rural District include: -

3 Hospitals, 7 health centres, 60 Government dispensaries, 13 Non Governmental organisation dispensaries, 8 parastatal owned dispensaries and, 4 private dispensaries.

3.2. Study population

The study population was women with children below one year of age, who had received antenatal services from any of the RCH Clinics in Morogoro Rural District within the period from October, 2004 – June 2005. Fifteen years was chosen as the minimum age in the study because of the minimum reproductive age. Oral consent was obtained from the respondents before the interviews were conducted.

3.3. Study design

A cross sectional, descriptive study was carried out between May and June, 2005, for partial fulfillment of the requirements for the Degree of Master of Public Health of the University of Dar es Salaam.

3.4. Sample size determination

The sample size in this case was given by:

$n = z^2p\,(1-p)/e$

Where as:

n = the desired sample size

p = the maximum expected proportion of women who had used a voucher to purchase a net, which is 12% or 0.12 (on the basis of the study by Mushi et al., 2003)

e = is the margin of error set at 5%.

Z = 1.96, the point of standard normal distribution corresponding to 95% confidence level

Hence, n $= 4 \times 0.12 \times 0.88 / (0.05)^2$

$= 0.4224 / 0.05 \times 0.05$

$= 169$

Thus, a total of 169 rounded off minimum of 200 women.

3.5 Sampling procedure

Morogoro rural district was conveniently chosen because it was easy to reach the district from Dar es Salaam. All the ten divisions in the district were written on pieces of paper and using simple randomly sampling, one division was picked from the list, and subsequently the same process repeated for selecting wards and one ward was randomly selected from a list of all wards from the selected division. A list of all villages in the ward was obtained from the ward office and simple random sampling was used to select five villages.

The sampling procedure was based on the Chairman of Hamlets in the villages. Each village was required to contribute 40 eligible women to the desired sample and since it was not expected to find all chairmen of Hamlets with women who received vouchers, random sampling of ten cells continued until the desired sample size was obtained.

In each village assuming that each Chairman of Hamlets was randomly selected. Each household belonging to the selected ten-cell leaders was visited and all

women in those that household, who received antenatal services from any of the RCH clinics in Morogoro rural District from October 2004 to June 2005 were eligible for the study.

3.5.1. Selection Criteria.

Criteria of inclusion; -

Women 15 years and above

Women with a child under one year.

Women willing to give consent and participate in the study.

Women who attended a Reproductive and child Health Clinic during the period October, 2004 to June, 2005

Criteria of exclusion: -

Women below the age of 15 years

Women with a child older than one year

Women who had not attended Reproductive Child Health Clinis during October, 2004 to June, 2005.



3.6. Study variables

Dependent variables

- Proportion of women who utilized DVs in purchasing ITN s
- Awareness of effectiveness of ITNs on prevention of malaria.

Independent variables

- Age of respondents.
- Marital Status of respondents.
- Education of respondents
  Occupation of respondents
- Source of information about DV
- Perception on benefits of DV
- Distance to DV facility
- Price of ITNs by using DVS

3.7 Research instruments

The study used both qualitative and quantitative methods

3.7.1 Semi structured Interview

A semi-structured questionnaire consisting mostly closed but also some open-ended questions formulated in English and translated into Swahili were used for data collection.

The open- ended questions required the women to explain their responses. The semi structured questionnaire was divided into several sections. The first part consisted of demographic data of the women, which included the following variables: age, marital status, educational level occupation. This was followed by what women knew about an ITNs Discount Voucher, their attitudes towards discount voucher, use of ITNs who bought by using DV, benefits of discount voucher, and perception of discount voucher.

Pre-testing

The purpose of pre-testing was to review and check feasibility of the study including the application of the instrument.

The pre-testing of the semi-structured questionnaire was carried out before the actual study took place as part of the training. This was followed by rephrasing questions for making them more understandable to the respondents. Also pre-testing encourage research assistants to adhere to the warding of questions. The

results of the pre-test were discussed between the principal investigator and research assistants.

3.8. Data collection procedure

Data collection was done after obtaining permission from the Regional Medical Officer, District Medical Officer and other District authorities.

Three research assistants were recruited and trained for the day before the study was conducted

The training aimed at orienting the research assistants to the study and providing them with the necessary skills for data collection.

They were also trained to seek consent of the respondents.

The training included:

A brief explanation about the study and the study objectives, a discussion about research tools, how to introduce the study, how to ensure anonymity and confidentiality, how to create and maintain rapport with research assistant

3.9. Data management

In the course of the field work, the principal investigator supervised the research assistants to collect the data by inspecting the completed questionnaire on the same day and look for omissions, and appropriate responses.

3.10. Data analysis

The open-ended questions were coded before the data were entered using EPI info computer software. The data was checked for errors and omissions cleaned and analysed.

Analysis included sorting and ordering of responses, which were thereafter grouped and summarized.

3.11. Study limitations

1. The notable limitation of this study was the availability of the data on DV. The programme is still in its infancy stage taking to consideration that it came into effect in October 2004 in Morogoro Region.

2. Unfortunately, some of the women were away from home at the time of the interviews and those at home may have different characteristics than those who were away.

3. Also the study found women busy with household chores, and it was at times difficult to get a woman to participate in the study. In households where eligible women were not available for the interview, when the household was visited; a revisit was made to conduct the missed interviews.

3.12. Ethical Considerations

Ethical clearance was obtained from Muhimbili University College of Health Sciences, through the MPH Coordinator and the Director of Post Graduate Studies. Permission to carry out the study was obtained from the Morogoro Rural District authorities.

The respondents of the study were assured of anonymity and privacy and were requested to give their verbal informed consent. Informed consent from the participants in the study was obtained orally after the study objectives were explained.

CHAPTER FOUR

4.0. RESULTS

4.1. Socio-demographic characteristics of the sample population

The study population consisted of 250 women with children less than one year of age. The age of respondents ranged between 15 and 45 years or above, with a mean age of 27 years. Further details of socio-demographic characteristics are given on table 1 below: Table 1 shows that majority (44.0%) of the respondents were in the age range 15-24 years and only 2.4% were above 45 years. Most of them (78.8%) were married, had primary school education (60%). The common occupations were peasantry (37.2%) and petty business (32.0%).

4.2 Proportion of women who were able to purchase ITNs

The results showed that of the 250 women over 15 years of age with children under one year were interviewed, 177(71%) had received Discount Vouchers and 125(70.6%) were able to purchase them.

4.3 Perception of women with children below one year on importance of ITNs in the prevention of malaria.

Regarding the importance of ITNs in the prevention of malaria, women were interviewed on their perceptions, which are tabulated in table 2.

Table 1: Socio Demographic Characteristics of Study Sample

Characteristic	Number of women	Percentage
Age		
15-24	110	44.0
25-34	94	37.6
35-44	40	16.0
45+	6	2.4
Marital Status		
Married	197	78.8
Single	39	15.6
Divorced	9	3.6
Widow	5	2.0
Education		
No formal education	77	30.8
Primary education	150	60.0
Secondary education	19	7.6
Vocational Training	4	1.6
Occupation		
Petty Business	80	32.0
Peasant	93	37.2
Livestock keeping	10	4.0
Employed	12	4.8
Others	55	22.0

Table 2: Perceptions of women on the importance of ITNs

Perception	Number of women	%
ITNs prevent malaria	67	53.6
Protects pregnant women against malaria	96	76.8
ITNs make children healthy	13	10.4
Reduces infants' deaths	14	11.2
Protects against anaemia in pregnancy	7	5.6

4.4 Coverage of Utilization of ITNs

The coverage of utilisation ITNs was assessed on the basis of the number of respondents who reported to have slept under a net on the night proceeding the interview day. Among the 177 women who had received discount vouchers, 121 women (68.4%) reported to have had slept under an ITN.

4.5. Factors that affect utilization of discount vouchers and ITNs

Dependent variables thought to affect utilization of discount vouchers and ITNs were tested and the results are presented in tables 3-12

Table 3: Relationship between a woman's age and utilization of discount voucher (purchasing an ITN)

AGE	UTILIZATION		Percentage
	Yes	No	Total
15 – 24	54 (91.4%)	2(8.6%)	56
25 – 34	51 (98.1%)	1(1.9%)	52
35 – 44	14(93.3%)	1(6.7%)	15
45 +	2 (100.0%)	0 (0.0%)	2
Total	**121 (94.5%)**	**4 (5.5%)**	**125**

The coverage of utilization of ITNs among the 125 women who had received discount vouchers was 94.5%. All age groups utilized DV at a rate above 90%, and the relationship between age and utilization of ITNs was not statistically significant. Therefore utilization of ITNs was not affected by a woman's age.

Table 4: Relationship between occupation and utilization of ITN

OCCUPATION	UTILIZATION	
	Among members of the occupation	**Among members of other occupations**
	No. (%)	**No. (%)**
Petty business	46 (92.0)	64 (95.5)
Peasant	32 (97.2)	78 (92.9)
Livestock keeping	4 (100.0)	106 (93.8)
Employed	8 (100.0)	102 (93.6)

When coverage of utilization of ITNs was analysed by occupation, there was no difference in utilization coverage when the different occupations were compared.

Table 5: Relationship of women marital status and utilization of ITN

MARITAL STATUS	UTILIZATION		Total
	YES	NO	
	No. (%)	No. (%)	
Married	103 (95.4)	2 (4.6)	105
Single	14 (87.5)	2 (12.5)	16
Divorced	2 (100.0)	0 (0.0)	2
Widow	2 (100.0)	0 (0.0)	2
Total	**121 (94.5)**	**4 (5.5)**	**125**

There was no relationship between marital status and utilization of ITNs.

Table 6: Relationship between a woman's occupation and purchasing of ITNs

OCCUPATION	PURCHASING	
	Purchased	Not Purchased
	No. %	No. %
Petty business	48 (92.8)	66 (64.7)
Peasant	34 (57.6)	80 (79.2)
Livestock keeping	4 (44.4)	110 (72.8)
Employed	7 (77.8)	107 (70.9)

Petty business women were more likely to purchase a net compared to women of other occupations. Women who were peasants were more unlikely to purchase a

net compared to women of other occupations fewer livestock keepers (44.4%) purchased a net compared to women of other occupations (72.8%). More employed women (77.8%) purchased a net compared to women of other occupations (70.9%).

Table 7: Relationship between women marital status and Purchasing an ITN

MARITAL STATUS	PURCHASING		Total
	Purchased	Not Purchased	
	No. (%)	No. (%)	
Married	104 (83.2)	35 (67.8)	139
Single	16 (12.8)	9 (17.2)	25
Divorced	3 (2.4)	3 (6.0)	6
Widow	2 (1.6)	1 (2.0)	3
Others	0 (0.0)	4 (8.0)	4
Total	**125 (70.6)**	**52 (29.4)**	**177 (100.0)**

The proportion of women who purchased a net was the highest among married women (83.2%), followed by single women (12.8%) and the divorced (2.4%).

Table 8: Relationship between education and purchasing an ITN

EDUCATION LEVEL	PURCHASING		TOTAL
	Purchased	Did not Purchased	
	No. (%)	No. (%)	No.
No formal education	37 (29.6)	18 (35.0)	55
Primary education	76 (60.8)	27 (51.0)	103
Secondary Education	11 (8.8)	2 (4.0)	13
Vocational Training	1 (0.8)	1 (2.0)	2
Others	0 (0.0)	4 (8.0)	4
Total	**125 (100.0)**	**52 (100.0)**	**177**

There are was no relationship between level of education and ability of women to purchase Insecticide Treated Nets

Distance to buy the net

Respondents were asked how long it would take to reach the shop to buy the net. Respondents were also asked about the transport cost to buy the net. Majority of women lived in a distance of 1 –5 km (79%) from a net selling station, only a few respondents (2.3%) lived in a distance of more than 11 kms to the sites. Others reported that they would walk to the site and buy the net.

About 55.2% paid Tshs. 100 –500, and 34.2% paid Tshs 501 – 1000. Minority of the respondents 10.6% paid more than Tshs 1000.

Where the women bought the ITNS by using DV

Respondents were asked where ITNS were bought, Majority (96.1%) of respondents reported to have bought the ITNs from the shop and about 3.1% of respondents bought them at the MCH clinic, only 1% at the Government project/NGO.

Majority of women (79%) who purchased a net using DV bought the nets themselves.

How women treat the nets with insecticide

About 75.8% of the respondents who bought the nets treat them with insecticide. 23.4% did not treat the nets and 0.8% not treated the nets and 0.8% of respondent not sure about the treatment of the nets

CHAPTER FIVE

5.0 DISCUSSION

The study was on assessing the utilization of Discount Vouchers in purchasing Insecticide Treated Nets among women with children below one year who attended Reproductive and Child Health Clinic. The baseline information about malaria in pregnant mothers and under five children is very important and in the implementation of control measures as stipulated in Roll Back Malaria of which among them are Insecticide Treated Nets, Advocacy, Education and communication.

The study shows that women were aware of the importance of Insecticide Treated Nets intervention in prevention of malaria in pregnant women and under five children (the vulnerable group).

Many studies in Africa have shown the success story of increasing coverage, reducing mortality and morbidity among children aged below five years (Premji et al., 1995; Binka et al., 1996; Abdulla et al., 2001), however these studies small and of experimental basis where subsidy to all net buyers had been made possible.

The present study revealed that utilization of the ITNs by marital status (Married, single, divorced and widow) was above 94%. The difference in utilization from one group to another was seen to be insignificant. From the findings it was evident that marital status was not one of the factors influencing the utilization of the ITNs. This meant that the women whether married or not need the ITNs to protect

themselves their families from malaria, for most of the women believe that malaria is more of a problem in their families and need to be controlled (Winch-et al., 1997).

The created awareness through the various media, MCH clinic and political forums contributed to the utilization of ITNs to break the social cultural barriers (Msuya and Curtis 1990, Winch et al., 1997) in all the villages visited the respondents came with money demanding to be supplied with the ITNs (believing that interviewer had come with the ITNs for sale)

Regarding the women's occupation the findings indicated that the women who were engaged in petty business and those with formal employments were likely to purchase the ITNs when compared to peasants, livestock keepers and other occupations. Livestock keepers probably because of the nature of their occupation were the least in terms of purchasing of ITNs using the DV. This indicated that occupation was one of the factors likely to influence the purchase of the ITNs.

The proportion of women who purchased the ITNs was highest among the women with secondary school education (84.6%) followed by those with primary education (26.2%). The likelihood of purchasing the ITNs increased with the level of education though the difference was not statistically significant.

The study also indicated that all those who purchased the ITNs utilised them regardless of their level education. This signifies that there is no association between education and utilization of ITNs.

The perception of women with children below one year of age on the importance of ITNs in the prevention of malaria indicated that most of the women were aware of the importance of ITNs most of the respondents indicated that ITNs protects against malaria.

From the study one may deduce that most of the women felt that ITNs are one of the essential tools in combating malaria if well utilised. However the short supplies of the ITNs in the locality was a major obstacle towards achieving the goal. On the other hand the economic life of most of women in rural areas is a bit poor when compared to those living in the urban areas. Thus making the utilization of the ITNs difficult

However apart from the unavailability of the net in abundant supplies, there might be some other socio-economic and other hidden barriers that affect the proper utilization of the net

According to (Mujinja, 2002) about 39% of the respondents thoughts that people in their respective villages do not want to use the nets because mosquito are not there all year around, while 27% reported that the villagers were too poor to afford a bed net. About 23% reported humidity and temperature (high) as the main reason impending, the people from using the mosquito nets. Inadequate ventilation accounted for 6%

Rural areas when compared to urban areas have poor infrastructure, especially road communication and transport. In such situation it was observed that the vendors who are the main outlets (96%) very few in numbers and are scattered over long distance from the household. This means an added financial burden to the women, for they have to look for the money to top up the DV and the money to pay for the fare to the vendors. The study indicates that most of the women (79%) have to travel about 1-5 Km to purchase the ITNs.

Follow up questions on why one hasn't utilised the DV to purchase the ITNs and if they still have them, on whether they still have intentions of using them in future, were asked. The response on some of these follow up questions indicated that due to various factors these DV were lost, misplaced or sold to other user to get the money to meet their other equally pressing domestic problems.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

From this study it can be concluded that most of the respondents were aware of the availability of discount vouchers, and when received they would like to utilize them to purchase the ITNs and protect themselves against mosquitoes that cause malaria.

Regardless of the age, education, marital status, or occupation, the respondents who received the DV, most of them utilised them to purchase the ITNs. The social standing of the respondents had influence on the ability to purchase the ITNs. Also the distance from the place of the domicile of the respondents to the shop had an impact on the utilization of the ITNs.

6.2 RECOMMENDATIONS

Public campaigns should be enhanced to enable more women with children under one year purchase the ITNs by using Discount Vouchers (DV).

MCH clinic be used as one other selling centres of the ITNs in essence that instead of giving the DV, the mother be issued with the net of which she will be required to pay as part of the medical bill (Delivery expense package).

DVS programme implementers need to look into possibilities of introducing the mobile services for the purpose of bringing their services nearer to the users. The mobile services may reduce the rampant shortage of the ITNs in rural areas, which are not easily accessible.

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DODOSO

Tarehe ya usajili.....

Jina la msajili.....

Jina la kijiji.....

Jina la mjumbe wa nyumba kumi.....

Nitakuuliza maswali machache kuhusu wewe mwenyewe na familia yako. Taarifa utakazotupatia zitasaidia kuboresha huduma za afya. Maswali yatachukua muda mfupi. Tunakusanya taarifa zote kwa usiri. Una hiari kukubali au kutokubali kuhojiwa. Hata hivyo tutafurahi kama utakubali kwa sababu uzoefu na maoni yako ni muhimu sana.

Unakubali kushiriki?

1=Ndiyo

2=Hapana

Taarifa binafsi

1. Je una umri gani?

a. chini ya miaka 15

b. miaka 15-24

c. Miaka 25-34

d. miaka 35-44

e. miaka 45 au zaidi

2. Je, ni kiwango gani cha juu cha elimu ulichofikia?

a. Hakusoma shule

b. Elimu ya msingi

c. Elimu ya sekondari

d. Chuo cha ufundi/ualimu n.k

e. Chuo kikuu

3. Je

a. umeolewa?

b. hujaolewa

c. Umeachika

d. Mjane

e. Nyingine (Taja).....

4. Je unafanya shughuli zipi kwa ajili ya kujipatia riziki?

a. Biashara ndogo ndogo

b. Mkulima

c. Mfugaji

d. Mwajiriwa

e. Nyinginezo (Taja)

Taarifa kuhusu Hati Punguzo

5 Je umewahi kusikia juu ya mpango wa hati punguzo ya kununulia chandarua kwa bei nafuu? |__| heardvouch

1 = Ndiyo

2 = Hapana

6 Ulisikia wapi kuhusu hiyo hati punguzo kwa mara ya kwanza? |__| heardwhere

1 = MCH na kituo cha afya

2 = Televisheni

3 = Mwanafamilia au Jirani

4 = Redio

5 = Kupitia kampeni ya utangazaji/uhamasishaji

6 = Gazetini

7 = Sijasikia

8=nyingine (Taja)

7 Ni nani mlengwa wa kupewa hati punguzo? |__| eligible

1 = Mwanamke mja mzito

2 = mtoto chini ya umri wa mwaka mmoja

4 = ingine (eleza) _____

5 = sijui

8 Je ulishawahi kuhudhuria kliniki na kupatiwa hati punguzo kwa ajili ya kununulia chandarua?

1 = ndiyo

2 = hapana **(mwisho wa usaili)**

9 Je kule kliniki, ulitoa fedha ili kupata hati hiyo?

1 = ndiyo **(nenda swali la 10)**

2 = hapana **(nenda swali la 11)**

10 Ulilipia shilingi ngapi? ……

Nililipa shilingi……..

11 Hati Punguzo uliyopewa ilitumika kununulia chandarua?

1 = ndiyo

2 = hapana **(nenda swali la 25)**

12 Nani alikwenda kununua chandarua?

1=Mimi

2=Mume wangu

3=Ndugu

4=Rafiki

5=Mwingine

13 Je chandarua hiki kilinunuliwa lini kwa kutumia hati punguzo ? |__|__|/|__|__|/|__|__|__|__| whenbuy

……..

14 Chandarua hiki kilinunuliwa wapi? |__|
1= Dukani wherebuy
2= Machinga
3=Kituo cha afya
4=Mradi wa serikali/NGO
5= Mnadani (gulioni)
6=Ingine, eleza
9=Haijulikani

15 Ni umbali gani uliopo hadi kufika mahali kiliponunuliwa chandarua (kwa kilomita) |__|__|__| distbuy
.....

16 Kiasi gani cha fedha kama gharama ya usafiri kililipwa? (Tsh) ..... |__|__|__|__| transbuy

17 Chandarua kilichonunuliwa kwa hati Punguzo kina ukubwa gani? Sizenet
1=3.5X6
2=4X6
3=6x6
4=Ingine (eleza)

18 Uliongeza shilingi ngapi kununua chandarua kwa kutumia HP? |__|__|__|__| costnet
.....

19 Je chandarua hiki kilishawahi kuchovywa kwenye dawa ya chandarua?
1 = Ndiyo
2 = Hapana
3 = Hakuna uhakika

20 Je kwa mara ya mwisho chandarua hiki kilichovywa lini kwenye dawa ya chandarua?
(mwezi/mwaka).....

21 Je umelala ndani ya chandarua kilichonunuliwa kwa kutumia hati punguzo usiku uliopita?
1. Ndiyo
2. Hapana

22 Je kuna mtoto wa umri chini ya miaka 5 kwenye kaya hii? |__| anychild
1=Ndiyo
2=Hapana

23 Je mtoto/watoto hao wanalala kwenye chandarua kilichonunuliwa kwa kutumia hati punguzo?
1= Ndiyo
2=Hapana

24 Je unafikiri nini kuhusu umuhimu wa mpango wa Hati Punguzo
a. Inasaidia kukinga malaria kwa kutumia vyandarua vyenye dawa
b. Wajawazito wanakingwa na malaria
c. Watoto wanaozaliwa wanakuwa na afya
d. Inapunguza vifo vya watoto wachanga
e. Kukinga upungufu wa damu kwa wajawazito
f. Mengineyo (taja)

(Mwisho wa usaili)

25 Ni kwa nini chandarua hakikununuliwa kwa kutumia hati Punguzo?

1 = Nilimpa mtu mwingine

2 = Tayari nina chandarua

3 = Nilikuwa sina fedha

4 = Niliipoteza

5 = Nilinunua bidhaa nyingine

6 = Niliiuza kwa mtu mwingine

7 = Kunakouzwa vyandarua ni mbali sana

8 = Sijui ni wapi pa kununulia vyandarua

9 = Ingine (eleza)

26 Hati punguzo bado ipo?

1 = ndiyo **(nenda swali la 27)**

2 = hapana **(nenda swali la 28)**

27 Je una nia ya kununua chandarua kwa kutumia hati punguzo hiyo

a. Nina nia ya kununua chandarua

b. Sina nia ya kununua chandarua

28 Kwa sababu gani huna hiyo hati punguzo?

1=Imeibiwa
2=Imeungua
3=Nimeipoteza
4=Nimeiuza
5=Nimempa mtu mwingine
6= Nyingine (Taja)

Asante sana kwa kujibu maswali haya

APPENDIX B

Questionnaire _____
Serial number_____
Date of interview _____
Name of interviewer _____
Name of village _____

I would like to ask you some few questions about yourself and your family in general. The requested information will assist us to improve the current health services being offered to you. The interview will be very short. Our interview will be in camera and strictly confidential. You have the right to accept or not to accept to be interviewed. However we shall be grateful if you will accept to be interviewed by for your opinion is held in esteem.

Are you ready to be interviewed?
a)Yes
b) No

Personal information

Q1. How old are you?
a. <15
b. 16-24
c. 25-34
d. 35-44
e. 45 and above

Q2. What is the highest level of education you have attained?
a) No formal education
b) Primary school education
c) Secondary school education
d) Post secondary education
e) Others

Q3.What is your marital status
a) Married
b) Not Married
c) Divorced
d) Widowed
e) Others (explain)

Q4. What is your main occupation?
a) Petty trader
b) Peasant
c) Livestock keeper

d) Formal employment
e) Other (specify).....

Information about Discount Voucher

Q5. Have you ever heard about Discount Voucher (DV)?
a) Yes
b) No

Q6. If yes, where did you heard about DV for the first time?
a) MCH clinic
b) Medical (television, newspaper, e-mail, radio)
c) Neighbors/family mate
d) Promotion and publicity campaigns
e) Not heard at all
f) Others (give details) .....

Q7. Who benefits from?
a) Pregnant women
b) Child under one year of age
c) Others (give details) .....
d) I don't know

Q8. Have you attended the MHC clinic and issued with HP for the purpose of purchasing the insecticide treated nets (ITNs)?
a) Yes
b) No (ends of interview, thanks)

Q9. Did you pay any money to get the Discount Voucher
a) Yes (go to question 10)
b) No (go to question 11

Q10. How much did you pay _____

Q11. If you have previously received the Discount Voucher, did you use it to purchase an ITN?
a) Yes
b) No (go to question 25)

Q12. Who went to purchase the ITN?
a) Myself
b) My husband
c) My relative
d) A friend of mine
e) Others _____

Q13. When did you last purchase the ITN by using the Discount Voucher on _____

Q14. Where did you purchase the ITN?
a) Shop
b) Street vendors
c) MCH clinic
d) Government project/NGO
e) Market
f) Others (explain) _____

Q15. What is the distance from your place to where you purchased the ITN? (in km) _____

Q16. How much did you pay for the fare (TShs) _____

Q17. What was the size of the ITN purchased by using DV?
a) 3.5x6
b) 4x6
c) 6x6
d) Others (explain) _____

Q18. How much did you topple up to purchase the ITN using the Discount Voucher? _____

Q19. Is your new net treated with the insecticide?
a) Yes
b) No

Q20. When it was last treated with the net insecticide?
Months/year _____

Q21. Did you sleep in the ITN purchased by using the DV last night?
a) Yes
b) No

Q22. Do you have the child / children under 5 years in your family?
a) Yes
b) No

Q23. If yes, do that /those children sleep in the ITN purchased by using the DV?

a) Yes
b) No

Q24. What is the importance of DV?

a) ITN prevents malaria
b) Protects pregnant women against malaria
c) Protects pregnant women against malaria
d) ITNs make children healthy
e) Reduces infant's death
f) Protects against anemia I pregnancy.

Q25. Why didn't you utilize the DV to purchase the ITN?

a) I gave it to somebody
b) I have the net
c) I had no money to top up
d) I lost my DV
e) I purchased other items
f) I sold it to somebody else
g) The shops are very far
h) I don't know where to purchase the net

Q26. Do you still have the DV?

a) Yes
b) No

Q27.Do you still have the intention to purchase the net/

a) Yes I do
a) No I don't

Q28. Where did you put that DV?

a) Stolen
b) Burnt in the house
c) Lost
d) Gave it to somebody else
e) I lost my DV
f) Others(Explain)

Thank you very much for answering these questions.

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