ASSESSMENT OF QUALITY OF MALARIA CARE IN PREGNANCY AT MKURANGA DISTRICT HOSPITAL

BY

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

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es Salaam a dissertation entitled: - **"ASSESSMENT OF QUALITY OF MALARIA CARE IN PREGNANCY AT MKURANGA DISTRICT HOSPITAL"** in partial fulfillment of the requirements for the degree of Master of Public Health (MPH).

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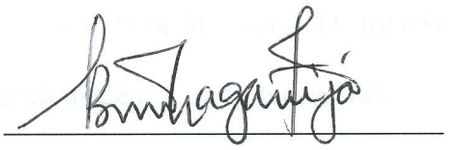
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Dr. B. M. Idindili, MD (DAR)

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DEDICATION

This dissertation is dedicated to my beloved wife **SANA** and My children **Martha** and **Mercy** (Malila)

ABSTRACT

A descriptive cross- sectional study was conducted in May 2002, at Mkuranga District Hospital. The aim of the study was to assess different aspects of quality of malaria care in pregnancy with emphasis on infrastructure input, the process of provision of malaria care to pregnant women and its impact. In addition the impacts were assessed in terms of pregnant women's knowledge of the causes of malaria, prevention and treatment.

The study comprised of 282 pregnant women and 8 clinicians. All of the pregnant women studied were peasants with absolute age range of 14 to 40 years old. Structured questionnaires were used to collect information from both clinicians and pregnant women. A checklist with a number of items was used to assess the availability of resources, such as human resources, physical infrastructure and equipments.

The major findings of the study were as follows: -

Majority of pregnant women interviewed (92.3%) knew that mosquito's transmits malaria. About 61% of pregnant women mentioned Insecticide Treated bed nets as one of the most effective method of malaria prevention at household level. While about 87% of pregnant women prefer to seek Hospital care once they suspect malaria infection, and few reported to seek malaria care from traditional healers and self-medication. However, the majority had little awareness about common complications

of malaria in pregnancy. Majority (90%) had positive feelings about communication between them and health care providers.

Deficiencies were recorded in relation to the size of the hospital buildings and staffing levels of different hospital cadres. The hospital buildings were found to be too small to accommodate a district Hospital. With regard to staffing level, the most affected cadre was the lower level cadre of nurses and medical assistants with a shortage amounted to 82% deficit.

The study further found that clinicians had no proper protocols for malaria diagnosis and treatment; neither followed the National Guidelines for malaria management in pregnancy. This study concludes that, there are deficiencies in various aspects of quality of malaria care in pregnancy. Most of the problems identified are due to the fact that the District is newly established. However recommendations for improvement of the situation are provided.

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ABBREVIATIONS

RBM	- Roll back Malaria
WHO	- World Health Organization
TRCHS	- Tanzania Reproductive and child health survey
SP	- Sulfadoxine/Pyramethamine
GTZ	- Deutsche Gessellschaft Fur Technische Zusammenarbeit
IPT	- Intermittent Presumptive Treatment
IMCI	- Integrated Management of Childhood Illness
CQM	- Comprehensive Quality Management
HMIS/MTUHA	- Health Management Information system
STD/AIDS	- Sexual Transmitted Diseases Acquired Immunodeficiency
MOH	- Ministry of Health
ITN	- Insecticide Treated Bed nets

CHAPTER ONE

1.0 INTRODUCTION

1.1 Global overview

Malaria is the world's most important tropical parasitic disease, and kills more people than any other communicable disease. In many developing countries and especially in sub Saharan Africa, malaria exacts an enormous toll in people's lives, in medical costs and days of labour lost (WHO, 1998). Direct cost per malaria case in 1987 for sub Saharan Africa as a whole was estimated to be US dollars 1.83, equivalent to 2.23 days of output, and US 3.30, or 4.2 days output, in 1995 (Shepard, D.S. 1991). The estimated cost of malaria in terms of burden to the Health system and economic activity lost are enormous. In affected countries almost 30% of hospitalization is due to malaria patient. In Africa where malaria is endemic, a single bout of the disease in adults costs an estimated equivalent of 10 working days (WHO, 2002). Costs to the country include costs for control and lost workdays. For individuals; costs include the price of treatment, prevention and lost income.

Malaria is a major Public Health Problem in more than 90 countries worldwide, with a total population of about 2.4 billion people, which is 40 % of the world population. Malaria prevalence worldwide is estimated in the order of 300-500 million clinical cases each year (WHO, 1998). More than 90% of all cases are in sub-Saharan Africa. The worldwide mortality due to malaria is estimated to be over 1 million deaths each

year. Mostly affected are young children in remote areas where access to health care is difficult (WHO, 1998). Besides young children other groups at high risk are: -

- Pregnant women
- Non-immune travelers
- Refugees
- Migrant laborers entering endemic areas

1.2 Malaria transmission

Malaria is caused by four species of *Plasmodium; Plasmodium falciparum, ovale, vivax* and *malariae.* Of this *Plasmodium falcipanum* accounts for the majority of infections and is lethal. Malaria is curable if promptly diagnosed and adequately treated. Increased risk of the disease is linked with changes in global climatic conditions (WHO, 1998). Increased agricultural and irrigation projects, mining activities, conflicts, migration, resistance to chloroquine and insecticide, poverty, easy international travel and road construction promote widespread of Malaria and difficulties in control measures. Even the gains on control are being eroded.

1.3 Malaria situation in Tanzania

The country still shows features of epidemiological transmission of infectious diseases. These diseases lead the list as the most common diagnosed diseases. Among which malaria is the commonest outpatient diagnosis approximated at 30-35% (MOH, 1999). Malaria is also the leading cause of hospital admissions. The rate

of hospital admission due to malaria has doubled between 1970 and 1985 from around 10% to over 24% (Kihamia and Kilama, 1991). About 16 million outpatient cases are reported annually from health facilities around the country and whilst few of these cases have laboratory confirmation the burden they places on the curative heath services is considerable. The government and other organizations from time to time have combined efforts to initiate control measures with minimal success. Currently the Roll Back Malaria initiative (RBM) Launched by WHO in October 1998 is active in the country. It is emphasized that although proper case management is the cornerstone of malaria control, prevention of malaria by household usage of Insecticide Treated bed Nets (ITNs) and other proven measures have to be undertaken (MOH \ National Guideline for Malaria, 2000).

Consistent use of insecticide treated bed nets can substantially reduce the transmission of malaria. Donor organizations are supporting social and commercial marketing of treated bed nets in an effort to expand their use. The data show that use of bednets is minimal in Tanzania. (National Bureau of Statistics (Tanzania). and Macro International Inc.2000.TRCHS 1999). Of the household with at least one child under five years old. Only 21 percent reported that, all children under five years old slept under a bednet the night prior to the interview. While four percent reported that only some of the children spent the night under a bednet. Of the households in which some children slept under a bednet, only ten percent reported that the net had ever been treated with insecticide. Therefore effective coverage was only 10%. There

are substantial differences between urban and rural households, with more urban households using bednets (52 percent) than rural households (17 percent.) Use of bednets is also higher in Zanzibar than in the mainland (National Bureau of statistics (Tanzania) and Macro International Inc.2000 TRCHS, 1999).

The Ministry of Health (MOH) periodically published policy guidelines to provide all prescribers in public and private practice, with a set of treatment and prophylaxis instructions. The aim is to minimize incorrect prescription of ant-malarial drugs and their indiscriminate use.

For the past many years chloroquine was the only drug recommended for chemophylaxis among pregnant women. However, it was reported by Lwihula et al (1997) that majority of women did not regularly take the chloroquine tablets. The widespread and high rates of resistance of malaria parasites to chloroquine prompted the MOH to introduce sulfadoxine /pyrimethamine (SP) to replace chloroquine as the first line drug for treatment of malaria for all age groups in August 2001 (MOH \Malaria National guidelines 2000).

The largest burden of Malaria is borne by children under five years of age and pregnant women. During pregnancy malaria may leads to gross anemia, stillbirths and low birth weight. The martenal health is vulnerable to malaria during pregnancy due to the lowered immunity. Congenital transmission of malaria may occur though

uncommon, affecting 0.8% of all infants born in Dar es Salaam (Mwaikambo and Mclarty, 1985).

In regions where Malaria is endemic the prevalence of anemia is higher with more severe outcomes for women and their offspring. It is estimated that more than 50% of pregnant women are anemic, largely due to Malaria (UNFPA, 2000). Malaria affects women's well being and reduces the resistance to other diseases, which lead to late pregnancy and immediate post-natal complications. Proportions of high-risk pregnancy reported at antenatal care in 1996 Tanzania were 30% (GTZ 1998). Though it does not clearly implicate malaria as the cause, evidence of maternal mortality among reported deliveries in Tanga region from 1997-1999, was 468/100,000 deliveries in Lushoto where malaria transmission is seasonal and 957/100,000 in Tanga city where malaria is endemic (GTZ 1998). Further statistical evidence of malaria effecting pregnancy and the role-played in influencing the outcome of pregnancy, is shown by the percentages of fresh stillbirth in Lushoto and Tanga Rural. From 1997 to 1999, in Lushoto 5.45% of all births in the hospital were stillbirth; whilst in Tanga rural 36-40 percent were stillbirth (GTZ, 1998). Malaria is more common in pregnancy compared to the non-pregnancy state. Immuno suppression and loss of acquired immunity to malaria is the cause (Http.www.malaria.com site 2001). In pregnancy malaria tends to be more atypical in presentation. This could be due to the hormonal, immunological and hematological changes of pregnancy. Parasitemia tends to be 10 times higher and as

a result the complications of *falciparum* Malaria are more common in pregnancy compared to the non-pregnant population. (Http.www.Malariasite.com2001).

Plasmodium falciparum malaria infection in pregnancy caries a high morbidity and mortality for the foetus and the mother especially during the first and second pregnancy. The possible sequalae of malaria in pregnancy are: -

- Anemia
- Premature labour
- Stillbirth
- Low birth weight
- Abortion

Since malaria infection during pregnancy is often covert, all pregnant women in malaria endemic areas are therefore advised to receive a full treatment dose of SP (3 tablets as a single oral dose) twice during the course of their pregnancy (MOH /National Malaria Guideline 2000). However Intermittent Presumptive Treatment (IPT) should not be considered as chemotherapy, the women can be infected after taking SP for IPT. For pregnant women to enjoy better health it is advised that they should access antenatal clinics at the beginning of pregnancy, and proper health education on measures of malaria infection prevention with emphasis to sleep under insecticide treated bed nets (ITNs) at night, and routine use of intermittent presumptive treatment with SP. (MOH /Malaria guidelines 2000). Malaria case management in pregnancy can be difficult since some anti-malarial (i.e.

Halofantrine) are contra-indicated in pregnancy, as they may cause severe adverse effects like cardiac arrhythmias and prolongation of the Q-T interval. Therefore the treatment may be difficult at dispensary level, particularly in cases of severe *Plasmodium falciparum* malaria whereby Quinine has to be administered parentally.

1.4 PROBLEM STATEMENT AND RATIONALE OF STUDY

Malaria is still a major challenge of Public health in sub-Saharan Africa. The number of malaria cases occurring annually is in the order of 90 million (WHO1991). Mostly affected are children under five and pregnant women. In Malaria endemic areas, malaria is the commonest cause of anemia among pregnant women and also causes hyperpyrexia, abortion and can lead to intrauterine fetal death in advanced pregnancy. Furthermore placental malaria parasitaemia is a frequent cause of low birth weight and is associated with increased neonatal death. During pregnancy, particularly among primegravida and second gravidas women are at increased risk of malaria parasitaemia and malaria illness than the non-pregnant state. The prevalence of malaria in pregnancy is about 63% in high transmission regions (Lipyoga, 1995).

In Tanzania, *plasmodium falciparum* malaria is an important contributor to maternal morbidity and mortality. However, malaria infection is one of the few contributors that are amenable to intervention during pregnancy.

The Ministry of Health and other stakeholders in health approached this problem by instituting policy guidelines on malaria prevention and treatment during pregnancy, provided as part of antenatal care package. It was expected that by increasing antenatal attendance of pregnant women would contribute to the reduction of maternal morbidity and mortality by earlier identification of risk factors including malaria infection. Despite of high antenatal coverage of about 98% and antenatal

attendance of 80% (National Bureau of statistics (Tanzania) and Macro International Inc. 2000,TRCHS, 1999), maternal morbidity and mortality is still high. While the intervention mentioned above if properly implemented have been reported to reduce morbidity and mortality. Lack of the expected impact of antenatal care services in reducing maternal morbidity and mortality due to malaria casts doubt on the quality of antenatal care services for malaria given to pregnant women. The aim is to identify factors within the health care facility and the community that contribute to the persistence of high maternal morbidity and mortality due to malaria. It is envisaged that this study will contribute to improvement of maternal health, which for long has been a problem in public Health.

1.5 RESEARCH OBJECTIVES

1.5.1 GENERAL OBJECTIVE

To assess the quality of malaria care in pregnancy at Mkuranga District Hospital.

1.5.2 SPECIFIC OBJECTIVES

1. To assess the availability of human resources, equipment, supplies including drugs relevant to malaria care at Mkuranga District Hospital.
2. To assess the clinicians compliance of diagnosis and treatment of malaria in pregnancy in relation to national guideline.
3. To determine level of knowledge of pregnant women on malaria treatment and prevention in pregnancy compared to the standard MOH guidelines.
4. To assess clients' perceptions about the quality of antenatal malaria care provided at antenatal care.

CHAPTER TWO

2.0 REVIEW OF LITERATURE

This chapter gives the explanation of what is known about quality of malaria care in pregnancy and the gap that exists in literatures reviewed. Quality of health care has always been a major concern in the health sector .In the past, quality of care has mainly been perceived with regard to physical infrastructure, technical level of health services and clinical operations.

The efforts of the Ministry of Health (MOH) initially aimed at increasing the network of health facilities and technical training of health workers. Thus, since 1961 the number of hospitals rose from 98 to 224, the number of dispensaries from 875 to 4276. The number of trained health personnel shows a tenfold increase since 1991. It was expected that the quality of care would automatically improve with the increased number of health facilities and trained personnel. However, as many studies have pointed out this endeavor did not meet the expectations. In line with the economic decline in the eighties the health system started decaying, infrastructure became dilapidated and due to financial and environmental shortcomings the health personnel was gradually loosing motivation and competence (GTZ 1999).

In the current Tanzania health reform programme, a number of efforts have been made throughout to assure the quality of health care. Guidelines and checklists for supervision of health services by the District Health Management Team have been developed. A systemic program has been instituted nationwide known as Health Information Management System (HMIS). The aim is to record all hospital-based data that may assist to make evidence based decision. Staff training on various health problems (family planning, malaria, STD\AIDS) is regularly organized (MOH CQM 1999). However the outcome of some of these efforts is disappointing, e.g. HMIS\MTUHA does not report on pregnant women mortality ratio due to malaria, no specific records of prevalence of malaria in pregnancy exists. (MOH, technical review 2002)

As the study on the quality of care at district hospitals in Tanga 1997 (Maier and Urassa 1997) has outlined, the professional attitude of health workers, their low commitment and motivation seem to be the core problems. Assessments of the reasons point out a broad spectrum of factors including lack of various resources, low staff renumeration, low qualification and little further training and poor qualities of managerial cadres. This study took a general approach and gave baseline information on the problems that are hindering provision of quality care in our health facilities.

2.1 Quality of antenatal care

Millions of women do not have access to good quality health services during pregnancy or good delivery care especially those who are poor, uneducated or who live in rural areas (Abouzahr 1997). Less than half of women in developing countries get adequate health care during these periods (Abouzahr 1997). Good quality services require that health care providers have adequate clinical skills and are sensitive to women's needs, that facilities have necessary equipment and supplies, and that referral systems function well enough to ensure that women with complications get essential treatment (Abouzahr, 1997).

Medical facilities in sub-Saharan Africa do have fewer resources than they need; shortages are acute and tend to worsen when economies decline (Ekwempu et al, 1990). This means that the quality of care in antenatal clinics and obstetric wards is generally low. Much of the antenatal care that is available contributes little to the primary objective of preventing life threatening complications (Rooney, 1992). Antenatal care may offer no more than weighing and nutritional information, and the importance of effective measures such as STD screening; Malaria chemopropylaxis and measurement of blood pressure and hemoglobin may not be undertaken or sometimes unavailable.

Some health facilities in developing countries face chronic shortages of equipment, drugs, and basic supplies. Families of women in labour may be forced to purchase drugs and supplies to bring to the hospital which can cause fatal delays (Thadeus and Marie 1994). Antenatal care clinics in Tanzania are regularly supplied by MOH with guidelines to be followed by health service providers. The current Guidelines in use are that of the family health project - Mbeya (Mbekem G, 1996). Have the following principles: -

1. To create and maintain a good relationship with client throughout visit.
2. Proper registration of client to allow follow-up.
3. Systematic history taking using clients card.
   - Past and present obstetric history
   - Medical history

4 Physical examination of the client from head to toe.

5 Abdominal examination and palpation

6 Vaccination if necessary.

7 Administration of routine prophylactic drugs and curative care if necessary.

8 Counseling for family planning.

9 Group health education.

10 Referral if necessary

In antenatal care clinics group health education sessions are aimed at informing the pregnant woman about pregnancy complications, importance of anti-malarial

prophylaxis and immunization. Other information includes nutrition, child spacing and iron supplements etc (JHPIEGO Corporation 2002). Despite the fact that 98% of pregnant women in Tanzania have access to ANC services the reproductive and child health survey (National Bureau of statistics (Tanzania) and Macro International Inc. 2000,TRCHS, 1999) found that, only four in ten women were informed about pregnancy complications, one third said they had access to anti-malarial drugs and about 44% of women said they were given or bought iron tablets during their last pregnancy.

This reflect the ineffectiveness of health education offered at antenatal clinic .A study in the rural village of Ilula Tanzania (Moller et al, 1998) found no relationship between the number of antenatal visits and the pregnancy outcome, but perinatal mortality was correlated to a low birth weight. Even with a mean attendance rate of six visits and full coverage by antenatal care, maternal and perinatal mortality remains high.

It is evident from the above literature that the pregnant woman contact with antenatal care is not worth much unless the issue of quality care is addressed. Massawe *et al*, (1994) studied pregnant women attending antenatal clinic at Mbagala Dar es Salaam. Most of the women did not know when in the course of pregnancy they should start antenatal care, nor were they able to give definite answer as to why a woman came for the first visit at a particular gestation age. Interpersonal communication between

the health care provider and client is a complex process to follow, though guidelines have been formulated. This interaction if not done appropriately could be responsible for client dissatisfactions. However clients' view is a determinant if improvements are to result in greater acceptance and sustained use of service. In Iringa-Tanzania a study found that 21% of women delivered at home because of the rudeness of health staff even though they thought delivering in health facility was safer (Biego et al, 1995). Many women describe providers in the formal health care system as unkind, brusque unsympathetic and uncaring.

2.2 Malaria in pregnancy

Malaria being potentially fatal to the mother and the foetus, all pregnant women (especially first and second pregnancy) in Tanzania, should be protected against malaria. This is the most important part of antenatal care due to high transmission of malaria in the country. The Ministry of Health recommends that all pregnant women should attend antenatal clinics and receives full dose of sulfadoxine\pyrimethamine, twice during the course of their pregnancy. One dose administered during the second trimester and one dose in the third trimester of pregnancy as intermittent presumptive treatment (MOH/ National Guidelines 2000). Pregnant women should be advised to sleep under Insecticide treated bed nets (ITNs) at night and to take other personal protective measures to reduce contact with mosquitoes (MOH, 2002)

Communities and health care providers are generally not aware of the consequences of malaria in pregnancy in terms of morbidity and mortality. However, they are aware of the availability of malaria preventive measures in pregnancy. There is still low uptake of Sulfadoxine\ Pyrimethamine malaria chemoprophylaxis (29%) and use of ITNs (8%) in pregnancy, although antenatal attendance is high (more than 80% and guidelines on IPT in pregnancy are available (MOH 2002).

The lack of relationship between the level of attendance at antenatal care and the extent of pregnant women uptake of health information from the antenatal care clinics reflects the quality of care provided. Such discrepancies can be rectified if supervision was properly carried out. Supervision continues to be considered and practiced as a top -down control rather than a supportive and advisory means to enhance the health care workers to manage themselves the performance quality of their services. Health workers are still perceived as receivers rather than integral of their performance.

2.3 Diagnosis and treatment of malaria in pregnancy

The following measures are recommended by the National Guidelines for Malaria diagnosis and treatment in Tanzania for all women as soon as pregnancy is recognized.

- Where microscopy is available a blood smear should be taken and examined for malaria parasites. If parasites are found, appropriate treatment should be given.

- Where microscopy is not available, the health worker should decide, on the basis of history and physical signs, if malaria infection is likely. Where malaria is suspected treatment should be given.

- In areas of high malaria endemicity, if no other cause for fever can be identified during pregnancy (for example a respiratory infection or a urinary tract infection, a woman who is pregnant and febrile should be assumed to have malaria and should receive a treatment dose of sulfadoxine \pyrimethamine (SP) without delay. In addition an anti-pyretic such as paracetamol is recomended. It should be noted that malaria parasites in pregnancy could be sequestered in the placenta. And that peripheral blood smears cannot identify placenta malaria infection. Thus Salfadoxine/Pyramethamine administration in intermittent presumptive treatment at 20th and 30th weeks of pregnancy. Due to possible side effects of Salfadoxine/Pyramethamine to the foetus in the last months of pregnancy, Salfadoxine/Pyramethamine is not recommended. Above 36 weeks of pregnancy quinine is the drug of choice.

- Dosage and intervals of drug administration should follow the same guidelines as for other patients.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of the study area

Mkuranga district is one of the districts of the Coast Region. It lies between latitudes $6^{0}35^{1}$ and $7^{0}30^{1}$ south of the equator, and between longitudes $38^{0}35^{1}$ and $39^{0}30^{1}$ east of Greenwich Meridian. The district is bordering Dar es Salaam region to the north, Indian Ocean to the east, Rufiji district to the south and Kisarawe to the west. The head quarter of the district is situated at Mkuranga semi - urban along the Dar es Salaam Kibiti - Lindi highway, about 50 km from Dar es Salaam city. The district has a total area of 2,432 square kilometers, whereas 447 square kilometers are covered are covered by water (Indian Ocean). 1985 square kilometers of land is suitable for agriculture and 51 square kilometers is forest reserve area. Administratively, the district is divided into four divisions, 15 wards and 101 villages. Available demographic data as projected from the 1988 census up to the year 2001 indicate that the district had 152,477 people of whom 79,191 are females and 73,287 are males.

The district experiences two rain seasons, the shorter rain season normally start from October to December and longer rain season in the months of March to June. The average rain is about 800 to 1000mm per annum. The district also experience

average temperature of 28^0C. The main economic activities include farming of cash crops (such as cashewnuts and coconuts), food crops (cassava, rice and maize). Small-scale fishing and petty business activities are also practiced in the District. There are many women groups organized for different activities aimed at raising their income and creating women awareness, and empowerment.

3.2 The District Health services system

Health care is provided by both modern (western) and traditional sectors. The modern health sector consists of government, voluntary and private health facilities. There is one government Hospital, which is the District Hospital, two health centers (at Kisiju and Mkamba) and seventeen (17) dispensaries. Voluntary and private agencies have a total of twelve (12) dispensaries. Three of them are owned by voluntary agencies, which include Islamic and Lutheran Church organizations. The rest are privately owned.

3.3 The major Health Problems in the District

The Top ten diseases of public health importance include malaria, acute respiratory infection, eye diseases, diarrhea disease, anemia, worm infestation, injuries, skin diseases, pneumonia, HIV\ AIDS, and sexually transmitted diseases. No data was available regarding accessibility to clean water and population accessibility to modern health care facilities.

3.4 Study design

The study was a cross sectional descriptive study aimed at assessing quality of malaria care provided to pregnant women. Qualitative and quantitative methods were used in the study. The qualitative and quantitative findings used to corroborate different issues and to draw inferences (triangulation of methods).

3.5 Study population.

The study population comprised of all pregnant women attending antenatal care clinic and Nurses & Clinicians attending to patients at antenatal clinic and obstetric and gynecology wards at Mkuranga heath centers during the study period (may 2002).

3.6 Sample size calculation

The sample size was calculated using the formula

$n = z_\alpha{}^2 p(1-p)/\varepsilon^2$ Where n is the sample size.

z_α is the standard normal deviation corresponding to a two sided significant level of α.

ρ is the approximated prevalence rate of malaria in pregnancy, taken to be 22 %.

ε is the margin of error on ρ, which is 0.05

Therefore the minimum sample size obtained was 264.

3.7 Sampling method

Convenience sampling was used. Pregnant women who attended at the antenatal clinic on the day the researcher and research assistant were present, were all recruited into the study.

3.8 Selection and training of research assistants

Two research assistants were trained to assist the researcher on data collection.

3.9 Pre-testing

The research instruments were pre-tested at health center that was not involved in the study to establish the validity of the questionnaires and make possible corrections.

3.10 Data collection

3.10.1 Inventory checklist

Structural availability is used as an indicator to determine structural quality of maternal health services in comparison with national guidelines. A checklist with a number of items was used to assess the availability of resources such as physical infrastructure, personnel, drugs, equipments, and their appropriate function and use.

3.10.2 Structured interviews with clinicians

All clinicians attending to pregnant women, who were available during the study period, were interviewed. A structured questionnaire was used to determine the actual practice of malaria diagnoses and treatment in pregnancy. The data obtained were compared to the standard national guideline.

3.10.3 Structured exit interviews with pregnant women.

During the study period pregnant mothers attending antenatal clinic were interviewed. A structured questionnaire in Kiswahili was used to collect data on different aspects of quality of malaria care in pregnancy.

3.11 Data processing analysis

After the fieldwork, the principal investigator arranged and assigned serial numbers on the questionnaires. Thereafter, the responses for the open-ended questions were recorded, categorized and coded. Data cleaning, validation and analysis were done using EPI Info 6 computer program.

3.12 Ethical consideration

Each participant was explained thoroughly by the researcher that the whole exercise is an academic requirement for Masters degree in Public Health. And that results of the study will be used for improving the quality of health services in the country.

Therefore, will not be used to accuse staff working in the center on negative findings. Each participant was assured that responses will be kept confidential and the names will not appear in any of the documents, which will be accessed by other people apart from the researcher. Respondents were asked to sign a consent form before the interview started. The researcher notified the participant that was free to withdraw from the study at anytime without consequences.

3.13 Study Limitations

The presence of the Researcher during patient- exit interview might have influenced the responses from the participants (interviewees) leading to bias.

3.14 Definition of terms

Quality of health services - the delivery of health care following the standards, which has been set.

A standard - is a statement of what is expected to happen or to be provided.

Clinician - a health personnel trained in the human Medical field to manage an individual's health problem or disease.

Primegravida - a pregnant woman who is having her First pregnancy.

Secodgravida - a pregnant woman carrying her second pregnancy

Multigravida - a pregnant woman who had three or More pregnancies

CHAPTER FOUR

RESULTS

This study was conducted in May 2002. A total of 282 pregnant women participated in the study. They were obtained through convenient sampling and a structured questionnaire was administered. The demographic characteristics of the pregnant women are summarized as shown in the table below.

Table 1: Shows demographic characteristics of the study population

Item	Number of pregnant women (n=282)	Percent
Age (Years)		
14-23	144	51.0
24-34	104	37.0
35-44	34	12.0
Gravidity:		
Primegravidae	56	19.9
Second gravidae	66	24.4
Multigravidae>3	160	56.7
Marital status:		
Single	49	17.4
Married	219	77.6
Divorced/Widowed	14	5.0
Education level:		
No formal education	51	18.0
Primary education	231	82

All the pregnant women interviewed were peasants. The mean maternal age at the time of the interview was 24.5 years, with absolute age range of 14 to 40 years and median age of 23 years. The mean age of primegravida was 19 years. The mean number of pregnancy (gravidae) was estimated to be 2.9 and the range was 1-12, comprising about 20% primigravidae and 57 % multigravidae women.

Prescribers survey

A total of eight (8) clinicians were interviewed using a structured questionnaire. Of these 4 (50 %) were females and 4 (50 %) were males. Their clinical working experience varied, and ranged from 1to 26 years of experience. Essentially, they were asked about diagnosis and treatment practices.

PREGNANT WOMEN`S AWARENESS ABOUT MALARIA

Locally perceived causes of malaria

Since malaria is so prevalent in the study area, an attempt was also made to establish what pregnant women perceived to be the cause of malaria. The responses were as summarised in table number 2.0.

Table 2: Responses to locally perceived causes of malaria

Factor mentioned	Number	Percents
Mosquitoes	260	92.3
Blood transfusion	2	0.7
Dirty environment	6	2.0
Don't know	14	5.0
Total	282	100.0

A high percentage (92.3 %) of the pregnant women attributed the cause of malaria to mosquitoes and (2.7 %) attributed the cause of the disease to blood transfusion and dirty environmental conditions. However, pregnant women were probed further and it shows that they did not know whether there were different types of mosquitoes and that not all mosquitoes transmit malaria.

Knowledge about malaria symptoms and signs

Since malaria is the leading cause of morbidity and mortality especially in underfives and pregnant women in the study area, an attempt was made to measure the extent to which pregnant women were aware of malaria signs and symptoms. The responses are summarized in table number 3.0.

Table 3: Knowledge about malaria symptoms as reported by pregnant women

Symptoms	Number of women	Percents
Body fever	196	73.7
Headache	172	64.2
Joint pains	144	53.7
Vomiting	74	27.6
Body weakness	120	44.8

Table number 3.0 above, shows malaria symptoms as reported by the pregnant women during exit interviews. Fever was mentioned by about 74 % of the pregnant women as the most common presenting symptom. 64.2% and 53.7% mentioned headache and joint pains respectively. One hundred and twenty (44.8%) and seventy-four (27.6%) of pregnant women mentioned body weakness and vomiting respectively. Perhaps body weakness and vomiting were reported by signification fewer women because there are common accompanying signs of normal pregnancy especially during the first trimester

Knowledge about malaria prevention in pregnancy

An attempt was made to assess the extent to which a pregnant woman was aware of different methods of preventing malaria infection. The frequency distributions of different preventive techniques as mentioned are summarised in table number 4.0.

Table 4: Frequency distribution of pregnant women's responses on different methods of preventing malaria

Item	Frequency	Percent
ITN	226	60.8
Chemical spraying	44	11.8
Others	62	16.7
Don't know	40	10.7

Generally the data summarized on table number 4.0, indicate that awareness of common malaria preventive methods is very low. About 60.8% of the respondents mentioned insecticide treated bed nets (ITNs) and other 10.7% were not aware of any methods. A sizeable proportion (16%) mentioned locally available methods, which included smoke, obtained from burning tree leaves, mtuti (locally made sleeping bag) and house mosquito gauze screening. None of the pregnant women mentioned chemopropylaxis as a preventive measure.

Health seeking behaviors related to malaria treatment.

In an attempt to assess what pregnant women do when they suspected to have malaria, questions were asked regarding the type of health care one would prefer to seek. The response pattern are summarized in the following table number 5.0.

Table 5: Preferred source of health care for malaria treatment

Source of health care	Frequency	Percents
Traditional herbs	2	0.7
Hospital/dispensary/ Health center	242	87.1
Medical stores/self medication.	52	18.8

Majority of pregnant women (87.1 %) said that once they suspect to have malaria they would prefer to go to a hospital or dispensary or health center for treatment. About 18.8 % of pregnant women also suggested that they would buy anti -malaria drugs from ordinary medical stores. Only two responded positively to the use of traditional herbs for treatment of malaria.

Awareness of anti-malarial drugs among pregnant women

Overall pregnant women interviewed appeared not to be aware of the names of anti-malaria drugs commonly prescribed to them. Only 42.7% mentioned Fansidar (SP) and chloroquine as drugs for malaria treatment. Other anti malarial was not mentioned at all. Possibly this could be due to the fact that rarely other anti malarial drugs are available in the clinic.

Pregnant women awareness of complications of malaria infection in pregnancy

Malaria is particularly dangerous in pregnancy; it may result into serious complications if correct treatment is not promptly instituted. Pregnant women are expected to be aware of the complications so that appropriate actions may be taken when warning signs are apparent. Pregnant women's responses on common complications of malaria in pregnancy, the response patterns summarised in the table 6.0 below emerged.

Table 6: Frequency distribution of responses to common complications of malaria in pregnancy.

Complication	Frequency	Percents
Abortion	268	57.5
Fever	112	24.0
Cerebral malaria	30	6.4
Anaemia	38	8.1
Others	18	4.0
Total	**466**	**100**

Abortion was the most common complication mentioned by 57.5% followed by fever (24.0%) and anaemia (8.1%). From table number 6.0, pregnant women were less

aware that malaria causes anaemia much more frequently than would be expected given the high prevalence of malaria and anaemia in the study area.

Infrastructures for malaria management at Mkuranga district hospital

A good performance of service depends on good working environment. This includes enough materials, functioning equipment and a sufficient number of well-trained personnel to cope with the workload. Through observation supported by a checklist the following human resources were identified.

Table 7 : Human resources

Human resources	Existing staff	Required by Establishment	%
Medical officers	1	2	50.0
Assistant medical officers	2	3	67.0
Clinical officers	3	13	23.0
Nursing officers	2	18	11.0
Public health nurse B	1	5	20.0

As shown on the table number 7.0 above, the number of staff at the higher level of care (medical officers and assistant medical officers) is much better as compared to the staff at the lower levels (clinical officers and nurse officers etc). The lower level cadre includes the clinical officers, nursing officers and public nurse grade B. There

is an acute shortage of staff amounting to 82% (deficit). These are key staff capable of instituting malaria preventive measures at the primary health care level. Another setback in the management of malaria in pregnancy is the unavailability of the senior staff in the evening and at night because the medical officer, assistant medical officers and nursing officers are staying in Dar es Salaam, about 50Km from the Hospital. They are commuting everyday to and from work. Therefore, any serious malaria case seeking care at the hospital in the evening or nighttime has to wait until the next morning to see a Medical officer or Assistant Medical Officer. There is also a big problem of referral for severe cases of malaria in pregnancy that would require blood transfusion or a specialised treatment. There is no reliable transport to ferry patients who are referred from Mkuranga district hospital to Temeke municipal hospital. Patients or her relatives have to pay for the vehicles fuel to be transported to the referral hospital. This creates delays for the needed care.

I. EQUIPMENTS

There were three high quality functional microscopes. There were more than adequate number of clean slides, sterile and clean gloves, needles and syringes. Disposable prickers, disinfectants, cotton swabs and other staining solutions were available and kept in cupboards under lock and key. The laboratory at the District hospital is capable of doing blood slide for malaria, urine microscope, urine analysis, microscopic stool examination and haemoglobin. The haemoglobin machine is old and of low quality (paper chromatography and love bond haemoglobin machine). At

the first point of call for pregnant women only weighing scale is available and functioning, there is no blood pressure machines, no stethoscope or thermometers. No chairs for patients to sit on while waiting for examination. Patients were sited on the floor in narrow corridors overcrowded with empty boxes, jerry cans and gas cylinders.

SPACE

The rooms were congested with carton boxes of drugs and other materials. In some of the rooms there was no space for examination couch and chairs for patients to sit on. In the laboratory specimen were collected while the patient is standing. The same situation was seen at the drug-dispensing window. The general impression in the consultation rooms (where a pregnant woman attended) was not conducive for work. Tape water supply is intermittent there are periods when no tape water was available. But containers are available which store sufficient amount of water for use in washing and cleaning.

II. AVAILABILITY OF ANTI-MALARIAL DRUGS

Chloroquine tablets were available in large quantities this was due to the fact that, the district had received a large consignment prior to the change of policy on malaria treatment. Therefore piles of this drug remained in stores. Fansidar (sulphadoxine \pyrimethamine) and amodiaquine drugs were also available but in small amounts since these are frequently prescribed and dispensed.

USE OF DISTRICT HOSPITAL

Most parts of Mkuranga District are accessible by road from Dar es Salaam throughout the year. There is enough and reliable public transport throughout the day; therefore patients can go to various hospitals in Dar es Salaam for treatment anytime. This study attempted to find out factors that would make pregnant women to choose Mkuranga district hospital. The responses are summarized in the following table number 8.0.

Table: 8 Reasons for use of facility

Reason	Frequency	Percents
Good services	98	32.0
Free services	64	21.0
Only hospital	92	30.8
Personal reasons	44	16.2
Total	**298**	**100**

As can be seen from table number 8.0, good services were one of the major reasons for pregnant women to use the district hospital. Other reasons included free services 21.0% and being the nearest hospital (30.8%), which can be accessed all the time.

TABLE: 9 Reported perceived process quality -

Management practice	Number of pregnant Women (n = 282)	Percents
Patient greeted by clinician	186	67.9
History of previous illness taken	124	44.0
History of current illness taken	240	85.7
Temperature measured by thermometer	2	0.7
Patient informed about diagnoses	168	59.6
Blood slide for malaria Parasites taken	12	7.3
Patient given anti-malaria drugs	152	53.9
Physical examination performed	152	53.9

With regard to reception only 67.9% of the pregnant women were greeted by the clinicians in the consultation rooms. History of previous sickness was elicited from 44% of the pregnant women while detail history taking regarding the current illness was elicited from only 85.7 %.

Only 53.9% of pregnant women reported that physical examination was performed. The physical examination included abdominal palpation auscultation for fetal heart sounds, checking for pallor and other relevant physical signs. Body temperature examination was done to 0.7% of all pregnant women using a thermometer. Usually blood slide examination was supposed to be done to all patients suspected to have

Malaria management and practice in pregnancy

(a) Criteria for malaria diagnoses

According to 50 % of the clinician, malaria diagnosis was largely based on clinical impression. At the district hospital patients who reported in the morning hours could be referred to the laboratory for blood slide thereafter it can not be done because the laboratory stops receiving specimen after 1 p.m. Therefore all patients reporting after 1 p.m. the diagnosis is only done clinically. With regard to malaria treatment in pregnancy, about 25% of clinician interviewed reported Fansidar as the first line treatment, prescribed as a start dose to be repeated after one week. Generally there is no proper protocol followed on prescribing ant malarial drugs. About 50 % of clinicians avoided Amodaquine to patients who appeared weak. Other anti malarial drugs like Metakelfin and Antemether are not frequently prescribed.

(b) Malaria management practice

Through exit interviews pregnant women were asked specific questions with regard to their interaction with the clinicians and nurses. Case management practices included the interaction between clinicians and patients. The following table 9.0 shows the findings of exit interviews: -

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clinical features of malaria infection. However only 7.3% had blood slide for malaria parasites were done, which was not consistence with the number [152(53.9%)] of patients prescribed anti malarial drugs.

Perceptions of services at the district hospital

In this study an attempt was also made to assess some of the factors that contributes to clients satisfaction during the process of interacting between clinicians and pregnant women. Table 10.0 below presents responses of pregnant women to different items used to assessing their views on the interaction with clinicians.

Table 10: Pregnant women perceived satisfaction of the services received.

Item	Number of pregnant mothers	Percents
Satisfied with duration of consultation	214	75.9
Satisfied with advice provided	200	70.9
Satisfied with communication	246	89.1
Use of the facility by relatives	238	84.4

Majority (89.1%) of the respondents were of the opinion that their communication with clinicians was satisfactory. A good proportion (84.1%) also expressed their desire to use the facility in future. However, almost 30% of them were not happy with the advice given regarding their health problems. Other 25% of pregnant women felt the time spent with the clinician was not long enough for a proper consultation to be made.

Information from antenatal clinic

In this study pregnant women were asked to respond to a set of questions aimed at finding out the types of messages given during the health education sessions, which are normally held by grade B nurses. These sessions were held regularly before pregnant women were examined. Usually sessions were conducted outside under the tree. Table 11.0 below summarizes the responses as mentioned by pregnant women.

Table 11: Responses regarding information learnt at the ANC

Responses	Frequency	Percents
Nutritious food	70	25.5
Regular use of hospital	12	4.4
Diseases	40	14.6
Family planning	24	8.8
Nothing learnt	128	46.7
Total	**274**	**100**

As is shown in the table 11.0, about 47% of the pregnant women did not learn anything at the antenatal clinic. Important messages regarding diseases and family planning were reported by about 15% and 9% pregnant women respectively. Only about 4% of all pregnant women interviewed learnt the importance of using the hospital regularly.

CHAPTER FIVE

DISCUSSION

This study was conducted in a rural District Hospital where malaria and maternal mortality is undoubtedly an important public health problem similar to many other districts in the country. The study looked at different aspects of quality of malaria care in pregnancy with emphasis on infrastructure input, the process of provision of malaria care to pregnant women and its impact. The impacts were assessed in terms of pregnant women's knowledge of causes of malaria, treatment and prevention. Also clients satisfaction about health care they received was assessed.

STRUCTURAL QUALITY

There is no doubt that a minimum of inputs is needed to provide a certain level of provision in health care. Provision of reasonably good service is only possible if motivated and sufficiently trained personnel are available, functional equipment and an acceptable working environment is in place.

At Mkuranga District Hospital, basic laboratory equipment were available to make a proper malaria diagnosis. Microscopic detection of malaria parasites coupled with history of fever or raised body temperature in holoendemic areas is the most reliable method for diagnosing malaria as the cause of illness (WHO 1992). Confirmative

diagnosis becomes more important in pregnancy where malaria tends to be rather atypical in presentation and sometimes covert. During the study period, there were shortages of laboratory staff to assure continuous availability of services. This accounted for the restrictions of laboratory operating hours. Health care facilities in sub - Saharan Africa do have fewer resources than needed; shortages are acute and tend to worsen when economy declines (Ekwempu et al, 1990). This means that the quality of care in antenatal clinics is generally below acceptable standards. Mkuranga District is not spared from the effects of the country's poor economic condition. There are acute shortages of trained personnel on the lower level cadre that amounted to 82% deficit. Also lack of accommodation for senior hospital staff has worsened the problem.

Most of the senior staff cannot be reached for work after routine working hours because of staying far away from the hospital. These shortages have prompted some health workers to be assigned duties and responsibilities that often require higher skills and qualifications. For instance medical assistants and nurse orderlies usually manage all patients including pregnant women after normal working hours. Often times, pregnant women who seek health care after normal working hours need emergency services from a qualified personnel capable of preventing life threatening complications of pregnancy. These lower level health personnel may lack essential clinical skills and expertise to adequately manage referred pregnant women from peripheral health facilities. In Masvingo, Zimbambwe, a significant proportion of

maternal deaths were caused by avoidable factors, including failure by health workers to identify women suffering from serious complication and refer them to higher level of health care system (Fawcus et al, 1996).

Furthermore, this study found that almost all pregnant women who attended routine antenatal services were attended by a Public Nurse grade B. The technical competence of Public Nurse grade B is not sufficient enough to render optimal care to pregnant women without supervision. There were serious deficiencies of interpreting and following of protocols of malaria care in pregnancy. The guidelines for malaria management in pregnancy require that pregnant woman must be given 3 tablets of Sulfadoxine|pyramethamine twice during the course of pregnancy, at 20^{th} and 30^{th} weeks of gestation (MOH/ National Guideline for Malaria 2001). However none of the pregnant women interviewed reported to have had received Sulfadoxine\ pyrimethamine. Failure to use malaria guidelines is a common finding among health workers. A study in Malawi found that only (44%) of clinicians were using the malaria guidelines (Lin, Y. and Franco L.M. 2000).

With regard to buildings, the currently available buildings are not spacious enough to accommodate a district hospital. Most of the rooms and corridors are used for consultation and storage of hospital materials and drugs. Clinicians did not have enough space for patients' examination and counseling. Deficiencies might not be avoided because this is a newly created District and plans are under way to construct

a new District Hospital, however, items have to be properly stored. Building a new District Hospital may not solve all the problems of qualified staff shortages, lack of motivation and commitment.

Focus of Health education sessions

This study looked at the type of messages delivered at antenatal care during health education sessions. It is a valuable aspect in assessing the impact of health talks in educating pregnant women about important health problems related to pregnancy, including malaria. For the purpose of this study the impact of health education was assessed in terms of pregnant women's knowledge about malaria in pregnancy. The findings indicate that a large majority (92.3 %) attributed the cause of malaria to mosquitoes. Knowledge of malaria among women of childbearing age is higher than that of the general public of adults. A study done in Geita found 85.5 % of mothers with children under five years knew that mosquitoes transmit malaria (Mtani 2001). While a survey conducted in four Districts of high malaria transmission found slightly over half of the households' respondents attributed mosquitoes as a cause of malaria (Premji Z and Leshabari, M.T, 1999). This implies that maternal and child health services are potential sources of health information in rural areas.

Another 2 % attributed the cause of malaria to dirty environment. Very few had misconception or mixed up with other disease condition, which can be transmitted through blood transfusion such as HIV and Hepatitis B diseases. Knowing the cause

of malaria is important for a better planning of proper preventive measures. Findings of this study indicate that knowledge about common preventive methods is very low. A large majority of about 40% of pregnant women did not know that Insecticide Treated bed Nets is the best preventive method currently advocated. With regard to awareness of symptoms of malaria among pregnant women about 25 % attributed body fever to causes other than malaria. Malaria in endemic areas is one of the most common causes of fever and that pregnant women need to be taught to recognize malaria fever. The World Health Organization went further to recommend anti malarial drug treatment for patients with history of fever in malaria endemic areas if no other causes of fever is identified (WHO, 1992). Other sources of health information like wall posters and booklets distributed by the Ministry of health-to-health facilities were not displayed at the District Hospital during the study period. Instead piles of these valuable materials were kept under lock and key in the hospital stores. A similar situation was seen in Muheza where only 36 % of the facilities had posters bearing messages about malaria displayed in public notes boards (Alilio, M.S 1999).

It is obvious that malaria is an important health problem to pregnant women but is not given much emphasis during health talks. There is a need to revisit the contents of messages delivered at antenatal care clinics to include more information about malaria in pregnancy.

Pregnant women's perceptions about the quality of services provided

Utilization of a service does not only depend on the accessibility and availability of services, but also the perceived quality by the users (Saurborn, R. and Reenk, H. 1996), which in turn determines acceptance and continuation of use of the facility. This study assessed the interpersonal relationships of patient-clinician interaction in terms of communication, duration of consultation, and if users were encouraged to use the facility in future. This reflects perceived satisfaction of the services received. A large proportion (about 90%) of pregnant women had positive feeling about the communication between them and the clinicians. Patients were well informed about their condition, more over diagnoses and treatment aspects were explained properly. This is a typical aggregated patient response, which tends to focus on personal aspects of the encounter. On general appreciation of the clinician as a person, his or her kindness and a good consultation environment. Structural weakness in the system was expressed by about 10 % of pregnant women who felt that the duration of consultation and advice provided was not satisfactory. This is attributable to the fact that sometimes a group of patients arrived late in the day while some of the clinicians had gone for lunch. However the findings of this study are different from that of (Kitange et al, 1993) whereby much of the weakness was due to attitudes of health workers.

Malaria management practice

Good medical practice requires that the clinicians adhere to the set guidelines of malaria management in pregnancy. This study found that detailed history of patients' current illness was taken in about 86% of pregnant women and history of previous illness was taken on about 44%. Usually past medical history in pregnancy is elicited on the first booking and recorded on the antenatal card, therefore on subsequent visits much emphasis is put on the history of current illness. On the other hand, physical examination has to be done thoroughly on every visit. In this study only about 54% of pregnant women had at least some form of physical examination performed. Physical examination is an important part of patient disease management especially to elicit painless signs like pallor and edema. Consequently failure to perform appropriate physical examination may lead to deficiencies in treatment and perhaps increase preventable outcomes of morbidity and mortality.

Body temperature examination by use of mercury thermometer was not done for almost all patients. The explanation for this was lack of necessary skills in history taking and physical examination on part of clinicians. Partial history of current illness was elicited, and only 0.7% of pregnant women whose temperature examination was performed appeared to have severe signs of high temperature (shivering and profuse sweating). And unavailability of mercury thermometers in

consultation rooms caused clinicians to ignore this important but simple physical examination.

Failure to use the National Malaria guidelines or lack of protocols to follow during malaria case management resulted into unsystematic prescription of ant malarial drugs. Misconception of some of the anti malarial drugs side effects, restrained clinicians from frequent prescription of Amodiquine and Sulfadoxine\ pyrimethamine in pregnancy. There is a general view that some sections of the National guidelines for malaria diagnosis and treatment are not clear. They mentioned specifically chapter seven in relation to use of Sulfadoxine \pyramethamine for Intermittent Presumptive treatment.

The findings of this study provide cause for concern and reflection on the impact of quality of care in reducing maternal morbidity and mortality due to malaria in Mkuranga District. The improvement of the quality of malaria management can be effective and achieve the intended goals if the deficiencies are addressed accordingly. In practical terms adequate resources need to be deployed, managerial weakness and personnel shortcomings have to be addressed.

CHAPTER SIX

6.1 CONCLUSION AND RECOMMENDATIONS

The study has found deficiencies in all aspects of quality of malaria care in pregnancy. Most of the problems identified are due to the fact that the District is newly established, and efforts are still underway to strengthen managerial aspects and construction of new hospital buildings.

The identified problems that limit the quality of service delivery included staffing pattern (level), patient flow, health workers availability and performance, and size of the buildings of the health facility. The health workers performance at this facility can be classified as sub-optimal due to the fact that, they are fewer in number compared to the available workload. Due to this shortage of qualified staff none of the clinicians interviewed appeared to adhere to the set national guidelines of malaria management in pregnancy. It is obvious that this guideline is not well integrated and therefore is not effective enough in reducing maternal morbidity and mortality in Mkuranga district.

Theoretically the guideline for malaria management is applicable and can lead to the desired outcome in normal practice. However the findings of this study reflect a need for training of the health workers on the application of the guidelines and can be able

to translate it into dynamic creative performance. Staffing pattern (and level), patient flow and availability of senior health workers after working hours were identified as key management problems at the facility. These issues clearly affected the health workers performance, client satisfaction and service utilization.

It was also found that all the senior staff including the only medical officer, Assistant medical officers and the two nursing officers are staying 50 km away from the district hospital. Any emergency situation involving pregnant women can result into unfavorable outcome, because transport has to be organized to transfer the patient to Temeke municipal Hospital. Efforts should be made to make sure that this key staffs are accommodated near the hospital, so that they can be easily accessible when a need arises. With regard to the staffing level, the big deficit needs to be rectified as quickly as possible. Staffing pattern is one of the important components that contribute directly to the quality of primary health care service delivery.

Based on the results of this study malaria case management needs to be emphasized. Proper history taking and thorough physical examination of pregnant women at all levels of health care delivery should be made mandatory. At present technical assistance is required to improve the clinicians clinical acumen. This will help them improve in eliciting and interpretation of physical examination findings.

Another possible modification is required to improve deficiencies of the health education messages. This study found very low percentages of pregnant women interviewed learned about family planning (8.8%) and diseases in general (14.6%). It is obvious that health education session at ANC is a major source of health information for pregnant women in rural district like Mkuranga. Therefore, there is a need for preparation of health education brochure to be used as guidelines, spelling out clearly what a pregnant women is supposed to know in relation to malaria in pregnancy and other important health issues like family planning and common epidemics like cholera and meningitis.

6.2 RECOMMENDATIONS

The District Health Management Team should plan for malaria case management courses for health workers currently involved in the care of pregnant women. The District health management team in collaboration with the district authority should set aside funds for recruitment of health workers especially nurses to fill the vacant posts.

The District Medical Officer should look for temporally accommodation near the Hospital for the officers who are currently staying in Dar es Salaam while efforts to construct permanent staff houses are underway. The district health management team should develop malaria manual for pregnant women spelling out clearly important aspects of malaria in pregnant suitable to the local situation.

To guarantee continuous quality improvement it is advisable

- To introduce a continuos system of monitoring and self-evaluation in context of quality management.
- To introduce competition between health facilities within the District through scoring system and rewards as positive incentives.

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