Administration of Health Services and the Control of Malaria in Zambia: The Case of Luangwa District

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Abstract: *Malaria is a major public health concern in Zambia and it has for a long time remained the leading cause of morbidity and mortality especially among the under five children and pregnant women. The purpose of this paper is to investigate the administration of health services and the control of malaria in Luangwa district, in Zambia. The case study strategy was adopted and the research was both quantitative and qualitative in nature. Two types of data were collected, namely, secondary and primary data. The data were collected from samples of key informants using interview guides and respondents (local people) using structured questionnaires respectively. The total number of key informants was 46 who included managers from the District Health Office, health providers, neighbourhood health committee members and community health workers. The total number for the local people (respondents) who were interviewed was 200. Quantitative data were analysed using Statistical Package for the Social Sciences while qualitative data were analysed using the method of content analysis. The findings reveal that government and its cooperating partners has been implementing various malaria control measures in Luangwa District. These include; insecticide-treated nets, indoor residual spraying, community sensitisation, malaria case management and prevention of malaria in pregnancy. However, there are challenges faced in the implementation of these measures. These include community members who do not fully comply with the measures which are implemented to control malaria. Further, the local people are not fully involved in malaria control programmes. Instead, they are just mere recipients of the services provided by programme implementers. This means that malaria control programmes are highly centralised, thereby failing to ensure community ownership of these programmes. The implication of this is the continued high prevalence rate of malaria in the district.*

Keywords: *Malaria, Malaria control, Community participation, Decentralisation*

1. INTRODUCTION

Malaria is a potentially deadly disease caused in man by infection with protozoa of genus plasmodium. MacLeod (1998) defines malaria as an infection, which may be acquired wherever there are human hosts carrying the parasites and a sufficiency of suitable Anopheles mosquitoes together with conditions of temperature and humidity that favour the development of the parasite in the mosquito. It may also be transmitted by transfusion or inoculation of infected blood and rarely transplacentally. The disease presents itself mainly by symptoms of generalised body aches, headache, vomiting, nausea, chills, malaise and fever. Hence, the disease is very difficult to differentiate from other infectious diseases.

Given the need to control and eventually eliminate malaria in Zambia, especially in Luangwa district which records high prevalence rates of malaria, there is need to determine the administration of health services in relation to the control of malaria in Luangwa district, especially that the district is one of the first districts in Zambia to be targeted for scale-up to insecticide treated nets. Consequently, this study will contribute to scholarly work and policy on malaria. This study will provide critical information, which may be used to try and control malaria in Luangwa district and elsewhere in the country. The study will further contribute towards people's participation on policy issues by airing

their views on matters that affect them such as health. Zambia is one of the African countries struggling with the problem of malaria. At independence, Zambia inherited a Malaria Control Programme that had urban and rural components, though not surprisingly; the control effort was concentrated in urban areas as a result of the health policies which were influenced by the colour-segregation ideology during the pre-independence era. There were few health facilities, so that access to malaria treatment was poor. After independence, the Government increased its health budget and improved health infrastructure. There was a new emphasis on health for all. The Zambian Government has identified malaria control as one of its main public health priorities. This is emphasised in all successive National Development Plans (NDPs) and the National Health Strategic Plans (NHSPs).In this respect, the Government, through the National Malaria Control Centre (NMCC) has been developing successive National Malaria Strategic Plans (NMSPs), aimed at significantly scaling up malaria control interventions toward the achievement of the national vision of "a malaria free Zambia". For instance, in 2017, the Ministry of Health in collaboration with partners developed the National Malaria Elimination Strategic Plan for 2017 to 2021 under the guiding principle of "a malaria-free Zambia". The interventions which have continued being implemented include the following; use of Indoor Residual Spraying (IRS); use of Insecticide Treated Nets (ITNs); use of Intermittent Presumptive Treatment of malaria in pregnancy; Anti-Malarial drugs; Introduction of Rapid Diagnostic Tests in all health facilities which do not have microscopy services; and Provision of health facilities and staff. Despite these measures, Zambia continues to have one of the highest rates of malaria incidences. In 2008, a total of 3.2 million cases of malaria (confirmed and unconfirmed) were reported countrywide, with 3,871 deaths (MOH, 2008). Malaria accounts for up to 40% of all infant mortality and 20% of all maternal mortality in Zambia, and represents a major socio-economic burden on the country, particularly on the communities living in malaria endemic areas (Ibid, 2008).In 2010, 4.2 million clinical and laboratory-confirmed cases were reported, representing an increase of 31% from 2008 (MOH, 2012). According to Luangwa District Health report (2016), the district recorded Malaria Incidence Rates of 842/1000 in 2011, 361/1000 in 2012, 560/1000 in 2013, 893/1000 in 2014, 469/1000 in 2015 and 439/1000 in 2016. May bin et al (2015) in their study done in Lusaka Province to examine morbidity and mortality rates of malaria from 2009 to 2013, report that malaria remains a major cause of morbidity and mortality in Lusaka Province especially in Luangwa district where both morbidity and mortality have been very high during the study period. Therefore, despite the idea of setting high targets for coverage of interventions to control malaria and eventually eliminate it, malaria continues to be a major public health concern. The preceding data about the malaria situation in the country and more especially the prevailing malaria situation in the rural district of Luangwa prompted the study to ask some questions.

The purpose of this paper is to investigate the administration of health services and the control of malaria in Luangwa district, in Zambia. To achieve its purpose, the paper begins by reviewing relevant literature on the concept of malaria. It then presents the theoretical framework guiding the investigation. Thereafter, the paper provides the research methodology, discusses measures of malaria control and challenges. Finally, a conclusion is given.

2. LITERATURE REVIEW

Literature review shows that a lot of work has been done by a number of scholars, especially on measures to control malaria in Zambia in particular and developing countries in general.Anon (2000) and Watson (1953), in their studies; provide a very good account of malaria control programmes in urban Copper belt towns of Chingola and Chililabombwe during the colonial era. The findings of the studies are of significance to this study because they have shown how the application of multiplicity of interventions in the control of malaria can bring about reduced morbidity and mortality rates and economic gains. The findings also provide a very good account of the need for qualified manpower in the fight against malaria. Although these findings are important, the focus of Annon (2000) and Watson (1953) is confined to urban areas in the fifties when Zambia's population was under two million. This study focuses on the rural environment in the post-colonial Zambia with over 15 million people.

The Zambia National Malaria Indicator Surveys of 2006 and 2008 and Demographic and Health Surveys of 2001 – 2002 and 2007, give an account of consistent increasing trend in coverage rates of all malaria interventions over the period 2000 to 2005. Most notably, the reports suggest impressive gains in reducing malaria parasitemia among children across all demographic background over the period under review. Lessons can be learnt from these reports in that they show that effective implementation of malaria control measures and increased trend in coverage of all malaria intervention may bring about major gains in the fight against malaria especially among the children and pregnant women who are most vulnerable, more so in rural areas. Nonetheless, the reports do not look at some important issues of compliance among community members, community participation, and challenges in the control of malaria. Furthermore, the reports are giving a general picture of major gains at national level without indicating specific challenges faced in the fight against malaria in urban and rural areas which may be different. This study attempts to cover up that gap.

Annie Banda (2009) conducted a study on factors influencing indoor residual spraying in Lusaka district's Mtendere, Kanyama and Matero compounds. The study findings are worth noting in that Banda investigated the implementation of one of the measures which has been adopted to control malaria in Zambia. Her findings are of value to this study because she gives an insight on factors which may influence the effectiveness of an intervention against malaria like indoor residual spraying. However, her study looks at just factors which influenced indoor residual spraying coverage in three compounds (peri urban areas) of Lusaka. The study does not look at other malaria control measures and how they are administered. Further, the study is also devoid of issues to do with people's utilization of other malaria control measures and challenges faced in the control of malaria in general. This study attempted to fill up that gap by assessing the administrations of health services in relation to malaria control in the rural district of Luangwa.

In his Dissertation entitled "Utilisation of Insecticide Treated Nets in households with children under five years in Muhorro Sub County, Kibaale District, Uganda", Bashinyora (2010), examines the intra-household factors that affect the utilization of insecticide treated nets in households with children under five. He examines the knowledge, attitudes, perceptions and beliefs of caregivers towards the usage of insecticide treated nets; and analysed the affordability of insecticide treated nets by households with children under five years. Similarly, lessons can be drawn from a study carried out in Mbarara district of Uganda on the perceptions about Malaria prevention by Nuwaha (2002). According to Nuwaha (2002), avoiding mosquitoes was the most common method mentioned for prevention of malaria. Nuwaha's (2002) findings are that, there were some doubts about the bed net efficacy in preventing malaria. The findings from the above literature are important because they show how people's different perceptions about malaria control measures like insecticide treated nets may affect effective utilisation of the measures. Further, the findings show that knowledge about different measures to control malaria is vital for people to appreciate and utilise the measures. Although these findings are important, the focus of the studies was confined to perceptions and attitudes towards utilisation of insecticide treated nets in general. The studies do not look at perceptions and attitudes towards other measures, people's participation in the control of malaria and other challenges faced in the control of malaria which this study attempts to do. Further, even if Zambia, Uganda and Kenya are developing countries, they may have different social, economic and political experiences and environments.

Lessons can be learnt from a study conducted by Sabin et al (2018) on malaria prevention and knowledge and behavior among pregnant women in India. According to the study findings, understanding of malaria varied as a concern for pregnant women, continued use of unproven malaria prevention and treatment strategies was evident in this population in India. The study findings are relevant to this study because they highlight the need to educate both pregnant women and health community workers about effective malaria methods to protect pregnant women and their babies from malaria. Though the findings are of significance to this study, the study in India is more generalized and mainly focused on one malaria control measure in a country which may have different social, economic and political experiences.

3. THEORETICAL FRAMEWORK

The paper is guided by the assumptions of Structuralist and Democratic theories. According to the Structuralist Health theory, health care is a state supported consumer good or service (Hunter, 1989).

There are three cardinal elements in the Structuralist approach. The first element is that of its structure. There is usually a tendency to decentralise. The second element of the Structuralist approach concerns the process of health delivery. The third major element of the Structuralist approach focuses on what Hunter (1989) refers to as "the behavioural synthesis". The critical aspect of the behavioural synthesis is the structural determinants of illness. This concerns a general agreement that illness is "located" not in the individual but in the social, economic and political structure of society. The Structuralist health theory will be appropriate in guiding the research on administration of health services in relation to the control of malaria in Luangwa district of Zambia because it is assumed that the state plays a critical role in the provision of public services like health. Further, the provision of health services by the Central government is done in the context of the decentralized system in order for the state to provide adequate and quality services to the people especially at the local level. However, the Structuralist theory has been criticized for failing to recognize the fact that decentralisation maybe affected by a system of administration at play.

Democratic theories of Local Government have also been deemed appropriate as guiding theories for the research. These theories are in two categories; Centralist and Decentralist theories. Centralist theories (derived from the term centralisation) support or justify the need for the central government to have increased control of matters at the local level. In effect, the advocates of centralist theories support a top-bottom approach in the governance system. They argue that a bias towards local democracy may result in neglect of issues such as territorial, social and economic justice. The argument is that, due to limited resources at the local level, the central government should play a greater role in the re-allocation of resources at the local level to avoid imbalances in the nation as a whole (Sinjwala, 2016). However, Centralist theories have been criticised for among other reasons, failing to recognise the importance of the bottom-up approach (decentralisation) in ensuring good governance in general or promotion of efficient and effective public service delivery at the local level (Ibid, 2016).On the other hand, Decentralist theories advocate effective transfer of power, functions and resources (both human and financial) to the lower levels of governance system in order to facilitate efficiency and effectiveness in public service delivery. The proponents of decentralist theories argue that in order for central government to respond to diverse local needs and interests, it should devolve power, functions and resources to local governments (e.g. councils and departments for line ministries) which are best suited to effectively deal with local needs and problems. Furthermore, the theorists argue in support of autonomous and elected local authorities or governance structures at the local level for effective participation of local communities in the governance system (Lolojih, 2008).

Decentralist theories, therefore, are helpful in understanding the administration of health services in relation to malaria control in Zambia, because it is through the dispersal of power, functions and resources from the center, that governments in a unitary system deliver public services to the people across the country. What remains of contention is how much of this power, functions, and resources should be devolved to the local level in order to effectively and efficiently administer public services like health? The paper, therefore, highlights that inadequate decentralisation, within the framework of a unitary system of administration, is not desirable because the effect is poor delivery of public services, as local administrative structures remain incapacitated in the performance of their functions. It can hence be deduced that the problem is not with the unitary system of administration, but the apparent failure by national leaders to decentralise power and authority within the unitary system to ensure effective public service delivery at the local level.

4. RESEARCH METHODOLOGY

The study was conducted in Luangwa District of Lusaka Province. Luangwa District covers an area of 3,471sq km and situated 350-500 meters above sea level. Luangwa District has a population of 25,294 inhabitants with the population density of 7.3 per sq. km (Central Statistical Office, 2011).

The research is qualitative and quantitative in nature (mixed-methods research design). Qualitative research focuses on the collection of in-depth information on the issue under investigation. Quantitative research focuses on gathering numerical data and generalising it across groups of people to explain a particular phenomenon.

The research uses the case study strategy. A case study is a research strategy that involves a detailed investigation of a particular social unit. The case study strategy emphasises not only on in-depth analysis of the selected social unit but also understanding its history and the environment within which it operates (Kothari, 2004).

The researcher collected two types of data. These are secondary and primary data. Secondary were collected from documents which include textbooks, journal articles, working papers, research reports, conference papers, workshop papers, seminar papers, dissertations and theses. These documents were obtained from individuals, libraries and the internet. Primary data on the other hand, consist of undocumented data which is both quantitative and qualitative in nature. Quantitative data were collected from the local people through interviews using structured questionnaires. Qualitative data was collected using unstructured interviews (interview guides) from key informants.

Primary data were collected from a sample of 246 comprising two categories of respondents. The first category comprises 46 key informants drawn from District Health Office, selected health facilities, neighbourhood health committees and communities. The second category comprises of 200 local people (community members).

In the first category, key informants were selected from DHO, health facilities, NHCs and communities using purposive sampling. In the second category of respondents, the sample for the local people was selected using the Multi-stage sampling method (also known as cluster sampling).

Quantitative data was analysed using Statistical Package for the Social Sciences (SPSS). This involved generation of both descriptive and inferential statistics. Descriptive statistics is used to describe the basic features of the data in the study. With inferential statistics, you are trying to reach conclusions that extend beyond the immediate data alone. Qualitative data was analysed using content analysis. This involved grouping information into themes. By systematically evaluating texts (e.g. documents, oral communication, and graphics) qualitative data was converted into quantitative data.

Concerning research ethics, the research was conducted in accordance with the Research Ethics Policy of the University of Zambia. Before commencement of the study, the University of Zambia Research Ethics Committee (UNZAREC) gave approval. Study approval was sought from the Ministry of Health to conduct the study in Luangwa district through the District Health Office. The purpose of the study was fully explained to the participants and informed consent was obtained from key informants and the respondents (local people). In this regard, all ethical obligations were met before embarking on data collection.

5. MEASURES OF MALARIA CONTROL

A number of measures have been implemented to control malaria in Luangwa district. These are provision of insecticide treated nets, indoor residual spraying, community sensitisation, malaria case management and prevention of malaria in pregnancy. These measures are discussed below.

5.1. Insecticide Treated Nets

The research findings established that the majority of study participants agreed that government provides insecticide treated nets for protection against mosquito bites. Out of the total number of 200 respondents, 155 or 77% agreed that insecticide treated nets were given out or distributed in their respective communities. In addition, all respondents who agreed that insecticide treated nets were being given out in their respective communities said that government was the main provider of the commodity.

It was also established that all the 46 key informants who were interviewed indicated that insecticide treated nets were being given to community members, more especially to the pregnant mothers, the old aged, people living with HIV/AIDS and the under five children who were the most vulnerable groups to malaria infection. Findings of this study about the provision of insecticide treated nets in the communities have some similarities with findings in previous studies. In the study done by Bashinyora (2010) on "Utilisation of Insecticide Treated Nets in households with children under five years in Muhorro Sub County, Kibaale District, Uganda", government of Uganda has put in place programmes that target the vulnerable groups supplemented by Non-Governmental Organisations and the private sector. Reports from the Luangwa District Health Office (2016) indicated that for medical reasons, priority was given to pregnant women, children under five years, and people living with

HIV/AIDS, as they are prone to severe illness and death from malaria. For social reasons, priority was given to vulnerable households, and the poorest of the poor, as they are least able to cope with illness. For epidemiological reasons, priority was given to rural households rather than urban, as the vector is more prevalent in rural environment. Such considerations were usually done in situations where it was not possible to have 100% insecticide treated net coverage especially through mass distribution. Therefore, it can be argued that the state supports the provision of insecticide treated nets as a public consumer good or service as assumed by the Structuralist theory. This is done by either government directly providing the commodity or by facilitating the provision of the commodity by cooperating partners.

However, according to the research findings, it was found out that despite the fact that the majority of respondents agreed that insecticide treated nets were being provided in their respective communities, the majority complained that the insecticide treated nets which were being given out to them were not adequate to cater for all households. Even majority of beneficiary households did not have enough insecticide treated nets to cover the available bed spaces. They also argued that even if they were given the bed nets, government did not replace them with new ones on time. They indicated that it took about five years for government to provide them with the commodity. Hence, they continued using the worn out bed nets. Further, the study revealed that out of the 200 respondents who were interviewed, 40 (20%) of respondents said that they had three insecticide treated nets in their households. 50 (25%) of the respondents said that their households possessed two insecticide treated nets, and the majority 110 (55%) said that their households possessed only one insecticide treated nets. The study shows that the majority of households had inadequate insecticide treated nets to protect themselves from malaria with the fact that the majority (48.3%) of households had seven household members and other families had more than seven members. The implication is that the majority of household members were at risk of malaria infection even if priority was to be given to high risk members of the family. Even in their general recommendations, the majority (57%) of the respondents suggested that in order to effectively prevent and control malaria in the communities, government should consistently provide adequate insecticide treated nets which should cater for each and every member of a household.

All key informants alluded to the fact that even if insecticide treated nets were provided to community members by government and other cooperating partners, the inconsistent supply made it difficult to cater for each and every household in the catchment areas where they were operating from. They further mentioned that the inadequate supply of insecticide treated nets compromised the effectiveness of the measure in preventing and controlling malaria in the district.

5.2. Indoor Residual Spraying

From the statistics, it was established that indoor residual spraying services were being provided every year in all the respective catchment areas in the district. Out of the 200 respondents who were interviewed, 115 or 57% agreed that indoor residual spraying was being conducted in their communities. According to the Luangwa District Health Office Report (2016), indoor residual spraying was introduced in Luangwa District in the year 2010. The district malaria focal point person who was the Public Health Officer at the District Health Office during the study, stated that from the time indoor residual spraying started, the operations were done once annually during the months of December and January. Government policy is that indoor residual spraying is supposed to be carried out every six months because the chemical which was mainly used (Actellic) lasted for six months. However, the study revealed that the operations were done once per year during the onset of the rainy season because of inadequate resources and that, usually after the rains, the breeding of mosquitoes reduces. The policy indicates that indoor residual spraying programmes should be conducted twice per year in order to achieve the set targets. The practice of conducting IRS once per year, compromises the effectiveness of the intervention. As a result, the district was still recording high malaria incidence rates in the country. Furthermore, the study established that even if indoor residual spraying was being done in communities, the majority did not utilise the measure due to a number of factors which are as follows; the programmes were conducted during rainy season when majority of the families are busy working on their crop fields, some community members reacted to chemicals,

development of resistance to the chemical in mosquitoes, some community members avoided being inconvenienced (privacy issues) and other misconceptions.

Relatedly, is the previous study conducted by Annie Banda (2009) on factors influencing indoor residual spraying in Lusaka district's Mtendere, Kanyama and Matero compounds. The study findings are worth noting in that Banda investigated the implementation of one of the measures which has been adopted to control malaria in Zambia. Her findings were that indoor residual spraying programmes were mainly carried out during the peak malaria period from December to May which coincided with the rainy season and had inherent potential to influence indoor residual spraying coverage. She argues that because indoor residual spraying operations were done during the rainy season, people were not willing to keep some of their properties in the rain to pave way for spraying. According to her findings, government failed to reach 85% indoor residual spraying coverage because community participation inindoor residual spraying was almost nonexistent, despite the community being the recipients of the services.

5.3. Sensitisation

It was established that sensitisation of communities on how to control malaria was being done in the district. Out of the 200 respondents who were interviewed, 185 or 92% agreed to the fact that community sensitisation was being carried out in respective communities by Government through the Ministry of Health. It was further established that the method of awareness which was mainly used to disseminate information on the control of malaria was mainly audio or verbal. All the key informants confirmed the above findings and indicated that community sensitisation was being done in all the catchment areas in the district. According to the findings, sensitization was being done in various ways which include the following: during antenatal clinics to pregnant mothers; during programmes like indoor residual spraying, mass distribution of insecticide treated nets and National Malaria Day.

5.4. Malaria Case Management

The research findings revealed that health providers in all health facilities used rapid diagnostic tests to detect malaria parasites in order to confirm whether a patient has malaria or not. Once malaria is confirmed, a patient is put on treatment using Coartem as the drug of choice for treatment of malaria since the guidelines are that a patient could only be treated for malaria when it is confirmed using rapid diagnostic tests or a microscope and be treated within 24 hours. Quinine was used in complicated malaria cases and painkillers were given to treat fever. It was also established that rapid diagnostic test kits were deployed at the community level in the context of Integrated Community Case Management (ICCM) of malaria. Rapid diagnostic test kits were used at community level by community health workers as part of a planned home-based care or screening programmes. At community level, it was the responsibility of community health workers and community health assistants to carry out diagnoses according to their training and recognizing danger signs. Rapid diagnostic tests were being used in all cases of fever to confirm malaria before treatment.

All community health workers interviewed pointed out that they were able to administer the first-line antimalarial drugs like coartem. In addition, they were able to take measures to reduce body temperature, such as tepid sponging, funning and giving paracetamol, a pain killer commonly known as Panadol. These community health workers conducted follow-ups with patients, particularly children below five years and pregnant women. They also provided education to the community on the need for compliance to treatment, recognition of danger signs, and prevention of malaria. Further, these community health workers made early referrals to health facilities in case of danger signs and treatment failures and they accompanied referral patients to the health facility or referral letter sent with the patient indicating treatment given and when.

5.5. Prevention of Malaria in Pregnancy

The study revealed that in Luangwa District malaria prevention and control during pregnancy was being done through three approaches: effective case management, use of insecticide-treated bed nets and intermittent preventive treatment. These services were being delivered as a package of antenatal care. In terms of case management, like other cases, pregnant mothers were tested for malaria and once malaria was confirmed, they were given prompt treatment by giving them appropriate

antimalarial medicine. The other approach was the provision of intermittent preventive treatment to pregnant women. That was because malaria infection during pregnancy was a major public health problem in the district, with substantial risks for the mother, her fetus and the neonate. Intermittent preventive treatment of malaria in pregnancy is a full therapeutic course of antimalarial medicine given to pregnant women at routine antenatal care visits, regardless of whether the recipient is infected with malaria or not. The study revealed that all pregnant women who went for antenatal care were given Sulfadoxine-Pyrimethamine, commonly known as Fansidar as per government policy and World Health Organisation recommendations as preventive treatment. The treatment was given during the second and third trimesters of pregnancy on a monthly basis at all scheduled antenatal care visits. This is to be taken as directly observed therapy in antenatal clinics. The treatment reduced maternal malaria episodes, maternal and fetal anaemia, placental parasitaemia, low birth weights and neonatal mortality. In addition, all pregnant mothers were given insecticide treated nets for them to use at night in order to protect themselves and the unborn child against malaria infection. It was pointed out by all health providers that in situations where insecticide treated nets were not adequate to cater for all households during mass distributions; priority was given to pregnant mothers and the children under five years of age.

6. CHALLENGES

The study established that there were challenges concerning measures implemented to control malaria. It was found out that insecticide treated nets were not adequate to cater for all household members. Key informants indicated that even if government and its cooperating partners provided insecticide treated nets for the local people, the main challenge was that the supply of the commodity was not consistent and that supplies were inadequate to cater for each and every household in the district. Even the majority of the study participants, suggested that government should regularly provide adequate insecticide treated nets to cater for all households in their respective communities. The argument is that the effectiveness of insecticide treated nets as a vector control method could only be realised if there was consisted mass distribution of the bed nets in the communities. In Burkina Faso, for instance, the mass and collective use of insecticide-treated nets reduced malaria incidence by 90% for all community members, even those not sleeping under the nets (Carnevale, 1988). The high net usage is sufficient to decrease the number of malaria-infected mosquitoes such that malaria rates in the entire area can reduce. It was established that the insecticide treated nets were usually not adequate to achieve full coverage because of inadequate financial resources at District Health Office to procure them. It was also established that re-treatment of bed nets was not done because programme implementers had no adequate resources to undertake the exercise and that compromised the efficacy of mosquito nets.

It was further found out that people from bordering countries-particularly Mozambique and Zimbabwe were often treated in Zambia. Local populations on both sides of the border spoke the same language, traded actively, inter-married and crossed the border frequently. As a result, commodities such as insecticide treated nets were frequently picked up in Zambia and taken back across borders. The practice further affected the utilisation of insecticide treated nets because the smuggling of the commodity reduced the numbers which remained in Luangwa district for prevention and control of malaria. The study revealed that one major challenge with insecticide treated nets was the under-utilisation of the bed nets due to unfavourable weather in the district. Due to the excessive heat, most of the people usually spend their evenings and nights outside their houses until when the temperatures reduce to optimum levels. The time when they are outside their houses, they are exposed to mosquito bites since the female Anopheles mosquito which transmits malaria is known to be very active between 19:00 hours and 04:00 hours, hence the high incidence rates of malaria recorded in the district especially during the rainy season (breeding period for mosquitoes). In a study carried out by Alaii et al (2003) in Western Kenya, community reactions were assessed before the introduction of permethrin-treated bed nets. Although malaria was found to be an important disease, insecticide treated nets were believed to be only partially beneficial because excessive heat was often cited as a reason for not using insecticide treated nets especially for the protection of the young children. Misconceptions about insecticide treated nets among the local people were also a challenge in Luangwa district. It was established that some mothers could not cover their children with insecticide treated nets at night because they believed that mosquito nets would make children suffocate as they

slept under the bed nets. The findings were further confirmed by the Public Health Officer who said that some community members believe that insecticide treated nets cause suffocation, hence, they do not want to use them. The implication is that, as long as parents continue to have such misconceptions about insecticide treated nets; children will always be vulnerable to malaria infection in communities. There was also a habit by some fishermen to use insecticide treated nets for fishing. The findings were further confirmed by the District Fisheries Officer who said that it was common to find fishermen using insecticide treated nets as a wrong method to catch fish despite vigorous sensitisation to discourage them to use mosquito nets for fishing. The argument is that since some fishermen opted to use insecticide treated nets to catch fish, the practice disturbed the ecological system because bed nets can catch even the smallest fish (fingerlings) which are known to usually help to control mosquito populations by feeding on them at larval stage of their life cycle. It was also observed that the type of household structures negatively affected the utilisation of insecticide treated nets in the communities. Most of the houses, especially in rural settings were not big enough to accommodate the number of household members. That implied that congestion was common and affected the proper use of insecticide treated nets due to heat and inability to provide the bed nets to all house hold members. Other challenges included socio-cultural intra-house dynamics which needed further inquiry.

From the findings, it was established that the majority of the respondents (57%) were aware that indoor residual spraying was being provided by Government but the intervention was not being utilized by majority of community members. The study revealed that indoor residual programmes were not fully successful because of a number of challenges. Firstly, funds were usually not enough to cater for transport to carry the equipment and the spray operators, procure spray pumps and chemicals and to pay the spray men. As a result, not all targeted structures were covered during the exercises. The implication is that there is no effective control of malaria in the district; hence the continued high incidence rate of the disease. The other challenge was that indoor residual spraying operations were usually done just after the onset of the rainy season, mostly in December and January. During this period, most of the families shifted to their fields to prepare for the farming season and when indoor residual spraying operators went to their homes, they were not available; hence catchment areas were not adequately covered. It was further established that the indoor residual spraying operations were only carried out once each year just before the onset of the rainy season. The practice of carrying out the programme once a year, made it difficult to adequately cover all the catchment areas in the district. It was also established that during indoor residual spraying exercises, some occupiers of houses did not allow spray operators to carry out the exercise, giving various reasons for their refusal. Some said that their bodies reacted to the chemicals which were being used for indoor residual spraying. Others could not allow spray operators to spray their houses especially the bedrooms to avoid being inconvenienced and for privacy reasons. Other challenges included the growing insecticide resistance by the vector (mosquito), poor house structures, low community participation and perceptions towards the chemical used for indoor residual spraying.

Sensitisation had its own challenges. It was established that community sensitisation was mainly done when there were some important programmes or events like insecticide treated net distribution, indoor residual spraying, immunisation and National Malaria Day. Sensitisation was done as usual during antenatal and under five clinics. Communication that seriously addressed specific behaviors was not done. Even the majority of key informants confirmed that there still remained a significant gap between knowledge levels and practice of recommended behavior in ITN usage, acceptance of indoor residual spraying and as well as early care seeking behaviors such as prompt testing and treatment though there has been an improvement in recent years. It was established that health facilities had inadequate resources to be able to carry out regular sensitisation programmes in respective catchment areas. It was further established that there was no proper coordination, dissemination, monitoring and evaluation of effective Information Education and Communication/Behaviors Change Communication plans and activities. The study revealed that community members were not well engaged in planning, implementation, monitoring and evaluation of sensitisation programmes. As a result, the information which was being disseminated did not seriously address specific behaviors.

The study established that malaria case management was faced with a number of challenges. To start with, rapid diagnostic test kits which were in use could only detect Plasmodium falciparum but could not detect other species of malaria parasites like Plasmodium vale and Plasmodiummalariae and these

are malaria species which are common in the neighboring countries of Mozambique and Zimbabwe. In Zambia, the common parasite which causes malaria is P. falciparum which can only be detected by the rapid diagnostic test kits which were commonly used in Luangwa District. The implication is that there is no proper malaria case management due to misdiagnosis. The study revealed that, there was no microscopic equipment in all rural health centers in the district and all suspected cases of malaria which could not be detected using rapid diagnostic tests were supposed to be taken to health facilities with microscopes as per government policy. Unfortunately, it became a problem to treat such cases since there were few health facilities with microscopes. The implication is that there were a lot of missed out malaria cases using rapid diagnostic tests and hence, giving wrong treatment especially to children under five years of age who are more vulnerable to malaria infections. The study further established that it was common to have drug stock-outs in health facilities which made it difficult to effectively treat and manage malaria cases especially in rural areas. When health centers run out of drugs and rapid diagnostic test kits, they have to wait for central government through Ministry headquarters to deliver the next consignment of the required medical commodities to the district. Such situations compromised the provision of adequate and quality health services in the district due to lack of financial decentralization at district level.

In the prevention of malaria in pregnancy, the main challenge was that some pregnant women did not appreciate the importance of attending antenatal clinics and seeking medical attention whenever they had signs and symptoms of malaria. It was mentioned by all community health workers who were interviewed that some pregnant women only attended antenatal clinic once, meaning that they failed to take all the three doses required for prevention of malaria in pregnancy and those were the mothers who developed complications during the delivery process. It was further found out that cultural beliefs against announcing a pregnancy too early in the gestation also played a role in the failure to reach higher intermittent preventive treatment in pregnancy coverage, in addition to occasional fansidar stock-outs at health facilities.

The study further revealed that the health facilities which were available in the district were not adequate due to the increase in population especially that health services available were extended to many patients from neighbouring districts of Nyimba and Rufunsa and countries of Mozambique and Zimbabwe. Due to increased population, most health facilities (health centers and health posts) were not adequate to meet the demand and to worsen the situation, some of the structures were old and in bad state of repair. The situation forced health workers to carry out outreach programmes which demanded for more resources. It was established that health facilities especially those in rural areas still faced a challenge of lack of electricity since Luangwa District had not yet been connected to the National grid. The implication is that it becomes difficult to properly store various medical drugs (maintenance of the cold chain) in health facilities which may lead to wastage.

According to study findings, accommodation for health staff was inadequate, forcing some health providers to live in villages. Even when it came to office accommodation, the scenario was the same where all health facilities did not have adequate office space for health staff. The implication is that the health staff cannot perform to the fullest because the environment they operate from is not conducive for human habitation and this may lead to high staff turnover. The study also revealed that there was still lack of skilled manpower at district and health center levels. It was further discovered that the human resource situation was perpetuated by factors such as low retention and motivation of existing health workers and inadequate funding for recruitment of additional health workers. The implications are obvious, low motivation among health staff, low productivity and high staff turnover which leads to increased disease burden in the district.

7. CONCLUSION

From the findings, it can be concluded that there are malaria control measures being implemented in the rural district of Luangwa. However, the control of malaria has not been all that effective because of high centralisation of the provision of public services like health by the central government. Consequently, local administrative structures which are supposed to deliver effective and quality health services fail due to lack of financial decentralization. Further, programme implementers do not fully involve the local people in malaria control programmes. Instead, the local people are mere

recipients of the services. The prevailing situation has made rural districts like Luangwa to continue recording high incidences of malaria.

The major contribution of knowledge in the administration of health services in Luangwa District has been the identification of Zambia as a unitary state and its linkage to the decentralisation policy. As a unitary state, Zambia, constitutionally, does not share sovereignty between the central government and its peripheral regions such as provinces and districts. Decentralisation, which should allow local participation, is ambivalent. Jealous of its total ownership and control over the whole country, the central government tends to be contradictory, decentralising and centralising functions at the same time. Therefore, in Zambia, effective health service delivery at the local level can only be enhanced if there is sufficient decentralisation of central government powers, functions and resources to lower levels of government administrative units and agencies. Due to deficiencies in decentralisation reforms, the system is less responsive to the needs of the people at the local level and that it has resulted in the neglect of the periphery, as government officials tend to pay attention mainly to those areas near the center, which if neglected, can result in sufficient loss of political popularity. The contention that the unitary system of administration results in the neglect of the rural areas can hold in the case of Zambia if sufficient decentralisation of financial resources is not made a priority by the central government to ensure effective and efficient delivery of health services.

There is need for further in depth research on intra house dynamics which seem to play a significant role in determining the effective utilisation of health commodities by the local people. Research is also needed on the usage rates for various types of bed nets, looking specifically at size, shape and material. Further inquiry is needed on Zambia's growing resistance issues. Insecticide resistance, particularly in bed nets and development of chemical resistance in mosquitoes, was greatly feared and something which some key informants felt warranted immediate investigation and a long term strategic plan to address. A durability study on available bed nets should be conducted so that longer lasting bed nets are procured in the future. Entomological studies should be done in order to better understand the behavior of mosquitoes so that interventions are more effective against the specific species in each area. Socio-anthropological research is needed to better understand the behavior of people in the district and also look at mobile populations.

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