

KNOWLEDGE, ATTITUDES AND PRACTICES OF RURAL COMMUNITIES IN THE
UTILIZATION OF INDOOR RESIDUAL SPRAYING IN THE PREVENTION OF
MALARIA IN OSHAKATI DISTRICT, OSHANA REGION

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DECLARATION

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DEDICATION

I give thanks to ALMIGHTY HEAVENLY FATHER for the strength and blessings He have given me in order to be able to successfully pursue to complete the course work and the thesis with commitments. I am dedicating this dissertation to my dearest wife Loise Ndapewoshali Angula and our three daughters Etuna, Selma and Eтуhole for their time they sacrificed to miss my tender care and attention as head of the family. Also for the firm saintly moral support they offered during difficult time of my study, as this was the longest period ever in my life to struggle with studies. Especially during the field work of data collection and completion of the thesis writing

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ABSTRACT

Malaria remains a major public health problem in Namibia; the country is classified unstable and prone to malaria epidemics, thus the indoor residual spraying programme was established in early 60's, after assessment study on malaria vectors prevalence was carried out. It is critical to understand knowledge, attitudes and practices entirety and perceptions of the rural communities' behavior link to malaria prevention measures in Africa particularly in the Namibian context. In some African countries, issues related to rural communities' knowledge, attitudes and practices studies observed hampering the effective implementation strategy for prevention measures of malaria. For example, in Namibia the poor involvement and participation of rural communities at risk of malaria predispose them not to value the importance of utilizing IRS in the prevention of malaria. The specific objectives of the study were ¹to determine the knowledge of the rural communities on utilization of IRS in prevention of malaria, ²to describe attitude and practices of communities utilizing the IRS in the prevention of malaria, ³to determine the factors affecting the effective utilization of IRS by the community and compliances in relation with acceptance of IRS. The quantitative descriptive design was the study methodology used and Oshakati district was a representative sample of malaria endemic districts in the country. A total number of 102 (68%) household heads study population were interviewed. The study sample was five constituencies randomly selected from the total number of seven which are targeted for spraying on annual basis as representative sample for the total population of region. In each constituency two villages were randomly selected for study. The study results on knowledge of malaria have revealed 91% respondents knowledgeable

about what malaria is including the transmission, causative agents and prevention measures. About 77.5% respondents indicate seeking medical assistance within 24 hours onset of the signs and symptoms; 22.5% indicated factors hampered was them not to be on time such unavailability of funds to pay transport to access health facilities on time and for pay hospital fees. About 95.1% indicated knowing that IRS is a measure to combat malaria and 9.8% were not sure what malaria is. About 72.6% respondents had their houses sprayed during spray-round prior the study; 81.4% indicated been protected by IRS against mosquitoes; 56% willingly accepted the IRS; 20.6% had their houses not sprayed for certain reasons and 6.8% refused the IRS. About 80.3% respondents preferred specific prevention measures by articulate a desire to use LLINs than IRS; and 92.1% supporting combined of measures (IRS and LLINs). Inadequate knowledge and understanding amongst the rural communities has no direct association with poor IRS utilization in prevention of malaria or low IRS coverage in the district. The study established that low IRS coverage is associated with insufficient IRS operational resources specifically the spray operators. Therefore, it was recommended for the district to increase IRS operational resources particularly the number of spray operators.

LIST OF ACRONYMS

ACT	Artemisinin combination therapy
BCC	Behavior communication change
CBHC	Community based health care services
DDT	Dichloro-Diphenyl-Trichloroethane
DPP & HRD	Directorate Policy Planning and Human Resource Development
DHS	Demographic and Health Survey
DSP	Directorate of Special Programs
GRN	Government of the Republic of Namibia
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
IEC	Information, Education and Communication
IPD	Inpatient department
IRS	Indoor Residual Spray
ITNs	Insecticide Treated Nets
IVM	Integrated Vector Management
KAP	Knowledge Attitudes and Practices
LLINs	Long lasting insecticides-treated nets
MHIS	Management of Health Information System
MoHSS	Ministry of Health and Social Services
MOU	Memorandum of understanding

MPR	Malaria Programme Review
NDF	Namibia Defense Force
NGO	Non-Governmental Organizations
NIP	Namibia Institute of Pathology
NMCP	National Malaria Control Program
NVDCP	National Vector-borne Diseases Control Program
OPD	Outpatient department
PHC	Primary Health Care
RTDs	Rapid Test Diagnostic tools
SADC	Southern Africa Development Communities
SFH	Society for Family Health
SMA	Social Marketing Association
T/A	Technical Assistance
QA	Quality Assurance or Quality Assessment
UNAM	University of Namibia
UNICEF	United Nations Children Fund
U.S.A.	United States of America
VCNA	Vector Control Need Assessment
WP	Wetable Powder
WHO	World Health Organization

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CHAPTER 1

1.1 INTRODUCTION AND BACKGROUND INFORMATION OF THE STUDY

This chapter presents in detail the background of malaria in the country, the problem statement, objectives, and significance of the study, theoretical framework, and conceptual frame work. The next chapter which is chapter two will dealt with the literature review.

Malaria remains a major public health problem in Namibia, and this situation is similar to most other Sub-Saharan Africa countries. The World Health Organization (WHO) as primary global guiding partner organization on anti-malaria control measures, has chosen indoor residual-houses spraying (IRS), as reliable and key vector control measures in the prevention of malaria. The method is designated to combat adult malaria vectors mosquitoes. In addition, the IRS is regarded as a gold standard strategy for malaria epidemic response and control particularly in the epidemic-prone areas. It is for this reason that IRS today is well accepted in many countries for use in malaria epidemics responses and control in order to prevent deaths and illness in situations classified unstable and seasonal malaria.

In many African sub-Saharan countries, the phenomenon of malaria epidemics is recognized being a public health threat taking lives every minute and continue as a challenging up to date (WHO, 2008; Najera and Hempel, 2001).

In areas classified as stable malaria areas, which positioned in tropics e.g. the Eastern, Central and West African parts, the indoor residual spraying may not necessarily be a desirable primary intervention unlike in the unstable malaria in southern and south-east African parts. It cannot work perfectly because those areas require frequent repeatedly rounds of IRS since transmission of the disease in those areas is throughout the year not seasonal. Therefore, IRS in

countries positioned in southern and south-eastern of Africa, IRS is a desirable intervention while the African tropics utilize insecticides treated nets (ITNs) as primary intervention for malaria vector control. Therefore their IRS program has gradually deteriorated for the reason that in these countries IRS activities were regarded an expensive exercise and cannot be afforded as sustainable malaria control measure. Lack of economic means to sustain the aforementioned state of affairs led these countries to out-source IRS and leave them under the hands of donor agencies and non-governmental organizations (NGOs) others abandoned it completely. All these are examples of current situation found especially in Central and West-African countries today, (Muhe, 2002). Those countries which adopted the IRS approach and later abandon the strategy was because it did not work-out for them to achieve any control strategic objective; this could not only be measured against sustainability but also due to poor resources mobilization including the mobilizing and sensitizing part for their communities about utilization of IRS in prevention of malaria (WHO, 2008).

The second reason could be that of World Health Organization's vector control technical expert committee study findings which was alluded by Muhe, (2002) and also as stated in WHO (2008) vector control technical expert committee study reports. The committee conducted a feasibility study to determine the impacts of the IRS blanket spraying approach and the recommendation of selecting IRS implementation. The study results revealed poor performing of countries engaged in blanket IRS with limited resources which could not achieve IRS strategic objectives in accordance to their plans. This was due to inadequate operational resources (human, materials and financial resources) including numerous individual countries challenges (Muhe, 2002). This study results has prompted WHO to advocate for countries to change from blanket spraying to selective or targeting indoor residual spraying, (Muhe, 2002).

Namibia has adopted the strategy of changing from blanket to selective spraying till to-date and is one of the few Southern African countries with sustained IRS programmes for more than four decades. The country demonstrated its capability through its government dedication to ensure protection of its population against malaria. Although selective spraying approach created many opportunities for national programmes improvement, it also causes some numerous weaknesses within national programmes too. According to the historical background of IRS in Namibia, it was introduced through cabinet decision and was promulgated as an Act of legislature enforcing spraying activities to start in identified affected areas with malaria.

This action has its origin in the entomological study of Botha De Mellon in 1963 who conducted a random sampling survey to determine the presence of possible malaria vectors in those areas suspected to be affected by malaria in northern parts of the country. This entomological survey of De Mellon documented the types of prevalent vector species found in Namibia. The vector behaviors of biting and resting indoors (endophillic and endophagic) were also determined. Then insecticide chosen for use was dichloro-diphenyl-trichloroethane 75% wettable powder (DDT 75% WP). From that time DDT was regarded the first choice insecticide till now; the first ever spraying activities in Namibia was then launched in 1965, targeted all affected areas by malaria in the whole northern belt of the country, (MoHSS, 2005 and MoHSS, 2010).

1.2 Statement of the problem

The supportive environment for both agents and intermediate hosts of malaria parasites including the human behaviors and activities, for example, the environmental alterations due to human behaviors fuel the magnitude of malaria problem. The condition that has resulted into

high malaria cases, i.e. malaria morbidity and mortality in out-patients and in-patients; malaria deaths increases in Namibian health-facilities over-the years also on records annually. Malaria as a health a concern has been and is still responsible for socio-economic losses. Its occurrence in the country is seasonal and discriminate, considering that it is more confined just in the northern parts of the country. This is where majority of the population estimated to be sixty five percent (65%) lives, (MoHSS, 2005). The global shifting of IRS strategy from blanket spraying (spray all houses in malaria affected areas), to the selective spraying (target to spray the most affected specific areas); this was implemented five years, just after independence. This change is believed to have brought many fluctuations within the national programme activities organization and blamed for being causative of numerous negative factors affecting the IRS activities. Amongst those factors blamed is that the spraying period was reduced from six to three months. Ideally this change was to start *closer* to the transmission period and to *complete* the spraying activities in all IRS targeted areas *before* the official period of malaria transmission season starts. In addition, the change did not only negatively affect the performances of vector control programmes but the country was unable to achieve much of its IRS objectives. For example, to complete areas targeted for annual spraying and obtain good results, some regional IRS annual coverage significantly failed to reach 90% within the recommended three months period.

The highly populated and most likely poverty stricken rural communities in targeted areas for spraying blamed the failure on the rural communities as the culprits of low IRS coverage due to their refusal to allow the spraying teams into their houses. It is for this reason, that rural communities are blamed for not willing to utilize IRS as measure to prevent malaria, and subsequently this high refusal of community members for spraying is believed to be the direct

contributory factors of low coverage in the regions. Another fact assumed as contributing factor is associated with the community's limited knowledge about the importance of IRS, thus not bothering to make use of IRS in the prevention of malaria. The similar belief underlying causes of little understanding and negative attitudes amongst majority of the rural communities is that against the insecticides used for spraying houses. Factors associated to lack of community mobilization and sensitization on malaria prevention awareness creation could not be left out to predispose the communities to devalue IRS. Hence, these worrisome factors prompted this study to assess the knowledge, attitude and practices for Oshakati district rural communities in the utilization of IRS in the prevention of malaria.

1.3 Purpose of the study

The purpose of this study was to assess knowledge, attitudes and practices and to determine the factors affecting the utilization of IRS amongst the rural communities of Oshakati district in Oshana region.

1.4 Objectives

1. To determine the knowledge of the rural communities on utilization of indoor residual spraying of households in prevention of malaria.
2. To describe the attitude and practices of communities utilizing the indoor residual spraying of households in the prevention of malaria
3. To determine the factors affecting the effective utilization of indoor residual spraying of households by the rural communities and compliances in relation with acceptance of malaria prevention measures with reference to indoor residual spraying of households.

1.5 Significance of the study

This study, although on a small scale, is the first kind to be conducted in Namibia. The constant low coverage of indoor residual spraying in malaria endemic regions whereby Oshana region was one of them has prompted this study. It was necessary to conduct this study in order to determine the factors that affect the communities not to make use of the IRS in the prevention of malaria control and what transpire in the low coverage in Oshakati district, Oshana region. The major role of this community KAP assessment was to understand the level how the rural communities in Oshakati district perceived the malaria measures. This was vital for the Ministry of Health and Social Services (MoHSS) to know the outcome of the study. This will provide useful information which will influence policymakers, and IRS programme implementers as well as the recipients of the services and add value to programme performance. In addition, the study results will guide future plans for change in IRS services provision in the district. All health matters on malaria prevention which affects the inhabitants in the district will improve to benefit their interests. The data to be generated will also built strong district IRS baseline information vital in annual programme reviews and planning of IRS operational resources allocations particularly to those responsible for the national malaria policy and guidelines implementation in the district. Furthermore, results can be useful to guide district advocacy programmes that are targeting behavioral change and communication (BCC) strategies. The results will enhance designing of community mobilization interventions and awareness creation messages aimed at strengthening advocacy on malaria prevention in the district. The above referred programmes are important tools and will serve as community persuasion activities and implementation of community based health promotion programmes in the district. Improved BCC activities in the districts will hoist high the National Vectorborne

Diseases Control Programme (NVDCP) in scaling up and fast-tracking of community behavior change as propagated in BCC national guidelines. This will allow community empowerment for them to take charge of their own practices in the primary prevention measures of malaria seriously.

The data presented in this report, cannot be taken as final key solution to all issues identified affecting smooth running of the district IRS programme but to be used as reference information.

1.6 Theoretical framework of the study

This study was linked to the epistemological theories of the Foundationalism, an extraction from different writers of public health theories and the main reference is Susan Haack an English professor of philosophy and law at the University of Miami in the United States of America (USA), and she defined the epistemological theory with the following concepts below.

Foundationalism means the self-evident basic beliefs that can justify other non-basic beliefs. The beliefs can be justified if they cohere with other beliefs a person holds, each beliefs is justified if it coheres with the overall system of other beliefs in the societies.

The believer must be able to justify his/her beliefs through internal knowledge and external or the outside sources of knowledge that can be used to justify a belief, (Tramel, 2007).

The purposes of the researcher to link his study topic to epistemological theories was based much on the assumption of the study topic deliberated in the problem statement connected to the characteristics of the factors liable for community not to take opportunities but opt to refuse

the use of IRS in the prevention measures of malaria. This refusal emanated from beliefs, and such beliefs can be justified by other characteristic factors such as “lack of knowledge”. The assumption of the studies is connecting factors such as “IRS refusals and low IRS coverage” believed to stem from lack of correct information and understanding of the importance of malaria prevention measures amongst the rural service recipients.

This was further translated by “lack of correct information in order for service recipients to be able to understand plus undertake the importance of malaria prevention measures”. In order to test the hypotheses, a behavioral study about knowledge, attitude and practice for the rural communities in Oshana was conducted to prove whether it is true that refusal of spraying was a result of the information gap about importance of malaria prevention measures. The second hypothesis: (“lack of skills amongst the health care services provider”) is the characteristic factors translated into the correct use of appropriate approaches on the side of malaria prevention service providers and their partners, with regards to community health education, community mobilization, and sensitization; a reference to the relevance of malaria prevention and control believed to result from the spraying refusals philosophy of eminent services recipients and ultimately it was the direct cause of overall low coverage in the region.

Hence, a study was conducted to test whether the assumptions such as “lack of good technique approaches of health education on community mobilization, sensitization and awareness creation on malaria prevention measures within malaria prevention services providers” is the true direct cause for communities not to value the importance of IRS and consequently has produced a successive low annual IRS coverage in some, if not all, malaria endemic regions, whereby Oshana region was the worst amongst them.

1.7 The conceptual framework

Mouton (2001) outlined the conceptual framework process that researchers are compelled to conduct preliminary proof readings of materials that are relevant to their topics, and contrast or concur with initial ideas generated by preceded researcher where it is appropriate to do so. He further advised that theoretical literature review information that connected to research questions should well refer to the specific issues of concern. It was for this reason the researcher has support for his discussions based on Mouton. The researcher in widening the study's extensive framework considered defining few concepts listed below and to serve as conceptual frame work, in the absence of statistical data presentations to serve as supporting experiment on original assumptions as stated in problem statement.

1.7.1. Definition of major concepts identified driving the study of knowledge, attitude and practices of rural communities' utilization of the indoor residual spraying in prevention of malaria.

The researcher in his exploration about definitions of main concepts that were used in this study namely; knowledge, attitudes and practice including others such as indoor residual spraying; community; community participation and malaria defined them as follows.

Indoor residual spray of houses

The concept of IRS of houses refers to the activity such as of insecticides depositing or spraying to the inside stable surfaces of the human habitations; such as the interior surface of the walls and roofs of structures in the houses. These mainly are the doors and windows' interior surfaces; including the under surfaces of roofs and eaves of human and that of domestic animal shelters in a given area. (Pluess, et al. 2010; Najera, et al. 2001).

Knowledge

The concept knowledge generally refers to a person's range of information in mind on something; it is further defined as a general awareness, or a possession of information which is a collected facts and data about specific subject. It is a familiarity or the understanding gained through experiences and through study of the true principles in acquiring skills from study and reading published information scriptures (<http://www.bing.com/dictionary>).

Attitude

An attitude is hypothetical construct that represents an individual's degree of like or dislike for something. Attitudes are judgments developed from the ABC model (affect, behavior and cognition model). The effective response is an emotional response that expresses an individual's degree about preference for an entity. The behavioral intention is a verbal indication or the typical behavioral tendency of an individual. The cognitive response is an evaluation of the entity that constitutes an individual's beliefs about objects. Mostly attitudes are results of either the direct experiences obtained from observing of objects or it can be from observational learning of objects in or from the immediate environment (<http://www.merriam-webster.com/dictionary/practice>).

Practice

The concept practice is widely used in social sciences such as sociology anthropology and archaeology referring broadly to anything people can do that works good for their daily life e.g. in a profession (law or medicine) or something established as custom or habit. It refers to the habitual performance or the act of repeatedly doing something to know or gain more knowledge (<http://www.merriam-webster.com/dictionary/practice>).

Prevention measures

This refers to as an appropriate actions taken against something, or a well thought-out actions to counteract any emerging situation lead into bad conditions/destructions of favorable conditions; or an appropriate action developed in order to curb any unfavorable conditions not to occur, such as averting disease conditions not to occur in any given population or given area where such condition is discriminate, (MoHSS, 2002).

Malaria

The term malaria designate a disease of humans, transmitted from man to man and produced by the infection protozoa from any of the four human parasites belongs to the genus *Plasmodium* (P). Namely; the *P. falciparum*, *P. vivax*, *P. malariae* and *P. ovale*, these are four types of human infection parasite species causing malaria. The spreading from man to man is through bite by female mosquitoes belongs to the genus *Anopheles*, upon infected with one of these parasites species (Govere, J. et al 2000).The parasites are very selective of their vertebrate host, therefore human malaria parasites have no animal reservoir other than humankind, and exceptionally the chimpanzees and few South American monkeys mainly can be infected with human parasites, (Najera, et al. (2001)

Community

Community refers to a group of people living together, residing in one locality and subjected to same law, same interests, categorized by means of common interests and fellowship, meaning more intimately involved in districts or the regional areas, (Humphrey, et al., 2010; Muhe 2002).

Community participation

The concept community participation denotes active involvement of people living together in a form of social organizational cohesion in planning the operational prevention programmes using local resources. It is a process through which community ultimately influences each other to own and shares the total control over the local development initiative decisions and project activities management, e.g. malaria control projects activities that aiming to combat their identified as priority problems directly or indirectly affecting them, (Muhe 2002).

1.8 Summary

This chapter went into detail on the background aspects of the study, the problem statement, general objective as well as the objectives and the significance of the study, including the theoretical framework and conceptual framework of the study. The next chapter which is chapter two will deal with the review of literatures and malaria control measures situations from the global perspective mostly in the SADC region and in particularly that of local settings.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the literature review on the researched topic area. It will also include description of malaria control interventions at both national and international, about malaria prevention programmes as well as the historical development regarding programmes explanations of some of the current negative impacts as well as the positive aspects. The next chapter three will dealt with study methodology processes.

2.2 Aim of the literature study

Here the researcher aimed at three main purposes; the first purpose was to seek similarly recent or the past studies conducted locally or globally as a community KAP survey on malaria prevention measures in order to decisively recognize the gaps to what is already known and what is not known about the research topic and to agree on the facts by ascertaining available information sources that would be relevant to cite and, where possible, to critically oppose or support the previously recognized findings. Kaniki (2005) in his contribution about “conducting an information search topic” says a literature review should be organized in such a way around a particular theme and should be written from the perspective or standpoint of the reviewer.

The third purpose was to explore and review the available literature on community KAP about malaria prevention measures and grasp some new ideas from previous researchers’ reports i.e. how they have structured their study methods and reports and how they have arrived at the

contrasting assumptions most importantly how correct citation or references were made. In addition, the aim, ultimately, was to have a diversity understanding on how to arrive at proper recommendations towards the findings of the chosen study topic. Kaniki (2005), in his script further concluded by saying “a literature review involves the processes of identifying literatures relevant to the topic of research and often what is required from the researcher is not just more findings but an ability to integrate and synthesis of overwhelmingly large volume of information already available on a topic.”

The fourth purpose for literature review was that, since it was the only source where a secondary data or secondary information relevant to the researcher’s thoughts about his research topic can be obtained. In principle, the literature reviews forms the first stage of the research process and de Vos, (2002) pointed out that literature reviews assist researchers to encapsulate more information than just reviewing. He further explains that it is a platform where researchers equipped themselves with the knowledge on how best they can set out their research topics. I found it helpful that I was able to depict ideas and expertise how to design my study as well as how to arrive at the conclusion.

Nevertheless, that I had experienced some difficulties in getting materials that were relevant to my research topic, particularly the materials that have reference to the Namibian context. Other barriers were curiosity in searching of information which might seem to be duplication or an imitation of earlier research reports. This was some of the pressure and fear that caught the researcher up and it was not only about duplications but was also how to detect discrepancies or errors that might have happened and how to correct them.

2.3 Exploration of concepts “knowledge, attitudes and practice” from retrospective facts

With regards to the three concepts defined earlier in chapter one; here the researcher is trying to link them with fighting of malaria measures from a global perspective. Before that, it is important to provide the overview of the malaria problem as reported by WHO, (2005), that, about three point two (3.2) billion people live with continuous risk of malaria and more than three hundred and fifty (350) million cases are recorded worldwide annually. The two thirds of the given figures are mainly from Africa. It is also further reported that malaria kills one million people every year and ninety percent (90%) of these deaths occur in children less than five years including the pregnant mothers in African regions, (WHO, 2005/2006).

Other sources revealed malaria has been and still one of the major diseases that contributes to poverty at global level, especially in Africa, Asia and South America continents, (WHO, 2006/2007). The top malaria prevention measure which is globally recommended by the World Health Organization for vector control is indoor residual spraying (IRS). It is a primary intervention suitable for pre-empting malaria transmission vectors especially in unstable areas. The WHO at same time recommend IRS to be complemented by insecticides treated nets (ITNs) in areas of the stable malaria (endemic and holoendemic) particularly in south of the Sub-Sahara region of Africa, South American and Asian countries (Muhe, 2002).

2.3.1 Malaria prevention measures considerate and practices of communities in different countries

The researcher has reviewed several community KAP researched topics on malaria prevention that were conducted in different African countries and beyond. Most studies conducted were to determine the perceptions and understanding of the community about malaria prevention

measures; and all were relevant to my research topic. It was for this reason I perused those research works and where possible, I linked them to my study.

Amongst of them were: - the KAP study on malaria prevention measures conducted in Gokwe district, Zimbabwe, in 1996; although this study was conducted a while back. The results show about 411 household heads were interviewed for the purpose of understanding the knowledge, attitude, practices and perceptions of these villagers about malaria prevention measures including implications of malaria control in general with reference to IRS programme. This study was also looked at the general acceptance of IRS by the villagers; the IRS is basically conducted every year. The outcome results have shown fifty percent (50%) of the respondents indicated not knowing the importance of the IRS; twenty six percent (26%) of the respondents contemplate IRS as a programme for controlling domestic pests and also did not know that it is for malaria mosquito control.

This study further came out clear that for IRS campaigns 1991-1992, the overall coverage of villagers' houses that were sprayed was seventy two percent (72%) meanwhile the twenty one percent (21%) were those villagers who refused the spraying.

According to the researcher's judgment about this KAP study, outcome results look less encouraging. This is because of the following two reasons: - Zimbabwe is amongst of the few governments in Southern Africa on record with good IRS programme when it comes to the sustainability, community mobilization approaches and community health education perspectives with regards malaria prevention measures.

The second reason, apart from the sustainability and good community mobilization on public health education, the government pours more resources into indoor residual-houses spraying

(IRS) programme for many decades, something that cannot be achievable to many of African governments. Therefore, with those efforts that Zimbabwean government has put into IRS, the expectation was that the country will be able to obtain at least an acceptable coverage of 90% in every seasonal campaign in all malaria endemic districts, which were marked for IRS in Zimbabwe. Furthermore, the communities that live in the districts that are at risk of malaria are supposed to have good understanding of the importance of IRS programme, in particular having awareness creation sessions that are given before the spraying campaigns launched every spraying season in the country.

In relation to the study results eighty two percent (82%) were respondents who did not bother using available protection measures against malaria versus those who responded positively in taking responsibilities to prevent themselves against malaria. That these individuals proved that they had some substantial knowledge and understanding about the root causes of malaria, (Vundule, and Mharakurwa1996).

The Gokwe community KAP study in Zimbabwe was one of the main reference points to the researcher's study question about determining the knowledge, attitudes and practices of Oshakati district rural communities in Oshana region, Namibia. There is a direct link and observable correlation between the study report and the research topic. Suppose this study was conducted anywhere in Namibia, possibly assumption could be that the outcome results are identical.

Another comparable case study was the exploratory KAP study about the perceptions of rural communities for Nouna, the capital of Kossi province in Burkina Faso, (Okrah, et al 2002). The study focused on factors associated with malaria prevention connected to usage of

mosquito nets amongst rural and partly of the urban multi-ethnic population of Nouna. The study honored to be conducted prior establishment of the local insecticides treated mosquito nets (ITNs) distribution community based project.

The findings revealed ITNs distributed to communities as beneficiaries, the majority of them were adults (male household heads) instead of children less than five and pregnant mothers to benefiting as they are most at risk of contracting severe malaria. Furthermore, results have shown that within the rural settings, only few percentages of household heads owned and used mosquito nets throughout the year. The rest of respondents confirmed using nets only when necessary during the wet season and sometimes for other purposes.

According to the researcher, this case study has reference points towards his research question and it was also associated to some of his study topic content. However, the analyzed ITNs distribution discrepancy in use amongst beneficiaries was not rationally determined between rural and urban communities. The researcher's interest was about the choices and preferences of ITNs by communities instead of IRS. Moreover, many aspects show similarities on community perceptions about using ITNs as measures for malaria prevention, these have prominently came out collectively with that of Okrah, et al (2002). There was no doubt that if this kind of study was conducted in Namibia, then the outcome results possibly could correlate in one way or another. In Namibia, there are these habits of communities using ITNs for other purposes such as catching fish instead of using it for the intended purposes.

In contrast, part of these social studies about the community practices on malaria prevention measures particularly those conducted within the Sub-Saharan African region, whether it is on IRS or on ITNs usage results are identical (show similar findings). In some instances ITNs

usage also differs from country to country even if results show general similarities. These differences are influenced by the periodic disparities linked to geographical and climatic features that play a major role in this regard. A few examples, like in Gambia, ITNs study results on usage revealed community affinity of using mosquito nets for multi-purposes prevention of vector-borne diseases, while in Ghana and Malawi same study results revealed ITNs community usage practices was not very common throughout the year like in Gambia; although mosquito bites behaviors in these countries are mostly throughout the year, (WHO, 2003; Korenromp, et al. 2003; Okrah, et al, 2002).

In Southern Africa Development Communities (SADC) countries of which Namibia is situated and as a member state, at that region malaria is seasonal, thus mosquito-bites are connected to transmission period. The ITNs usage habit or practices for the communities in this region increases during wet season. This is also the time of mosquito breeding peak season and the breeding sites are just so many and difficult to control hence the profuse mosquito population density. These areas are predominantly arid or semi-arid (geographical description for most of these areas is very dry unlike in the tropics settings where there is plentiful dampness a condition that is favorable to mosquito survival.

In addition, communities' practices in ITNs usage limitation factors are relatively not depend on the geographical and climatic features alone as mention earlier but are also dependent on multifaceted factors such as community beliefs and practices. Traditional and economic factors may play a stronger role than others, for example in Burkina Faso, some study results revealed significant numbers of household heads who cannot afford ITN price because they were relatively expensive in local markets. This particular situation of un-affordability has invited some pressure amongst government and private institutions to embark on community health

agendas of subsidizing ITNs; including re-treatment services, can be a solution in assisting the poorest community members and families who cannot afford the services, (Korenromp, et al. 2003; Najera and Hempel, 2001; Okrah, et al, 2002).

2.4. Detail analysis of indoor residual spraying preferences globally and in Namibian context including the use of variety interventions to combat malaria locally

From early 1950s to 1970s, a steady and significant decline of deaths caused by malaria was globally observed; this was attributed by successful malaria elimination agenda in the known as developed world i.e. North Americas, Europe and other countries in Asia, (Muhe 2002). These global achievements in developed countries were observed because of the remarkably effective malaria control programmes were increased in those areas. However, this trend gradually reversed starting from 1990s again due to malaria re-emergence; the situation that has completely changed the state of affairs on global malaria situation. As mortality and morbidity features started to increase: up to over one million deaths and 300-500 million episodes of malaria recorded each year globally. The high numbers were primarily due to the climbing malaria episodes recorded in the sub-Saharan Africa alone; but generally the drastic increases was furthered by there-emerging malaria in areas where it was formally known been eliminated with IRS i.e. Eastern Europe and central Asia, (Muhe 2002).

These re-emergences of malaria episodes were due to many factors and among them were the declining of vigilance services and reductions in malaria control resources of those countries. Furthermore, the situation of sub-Saharan Africa was exacerbated by general poor access to health care, poor health service infrastructures including limited financial and skilled human resources, (Najera, et al. (2001) and Muhe, 2002).

Whereas there was and still are the presence of economic crises and resurgences of war, border conflicts, famine and other complex emergences still fuelling the situation of malaria episodes and deaths to increase in Africa. These situations have prompted the sub Saharan African children under the age of five years and pregnant mothers to become more vulnerable. Due to the displacement and large population migrations because of wars that causes the breakdown of basic social services. These directly and indirectly caused epidemics/outbreaks of malaria and other communicable diseases in African continent areas. The intercontinental factors such as the climatic conditions (environmental changes such as the global warmings) are also effects that contribute to situations that increase malaria; for example the floods situations etc. Meanwhile, sub-Saharan Africa is seeking mitigating ways to overcome the effects of malaria epidemics that are still continuing to plague the region.

2.4.1 Indoor residual spraying at global perspective

Indoor residual spraying was indeed and still regarded as the primary intervention method to interrupt the transmission route of the disease by reducing of mosquito populations that harbor and transport malaria parasites (plasmodium) from man to man. The World Health Organization (WHO) advocates that, if IRS is correctly and timely applied, it reduces malaria transmission up to more than ninety percent (90%). It is for this reason that the WHO is recommending the scaling up of IRS as indispensable tool for seasonal malaria areas and should be supplemented by insecticides treated nets (ITNs) in malaria endemic or holoendemic areas where IRS might not feasible for use (WHO, 2003).

Between 1949 and 1969 global efforts were made to eradicate malaria through the “malaria eradication program in some parts of the world with IRS; between and during this era attempts

in Africa too were made in the form of pilot projects. The 8th World Health Assembly endorsed plus launched the malaria eradication programme in 1955 to be initiated by malaria endemic countries in the world. Many parts in the Americas, Europe, including the majority countries of Asia and Oceania implemented the programme while in Africa only relatively few pilot projects were put up as trials during this eradication programme; especially in West Africa, (Muhe, 2002).

Within the 15 years of the eradication programme implementation, malaria was eliminated by IRS with use of DDT from most of the developed world (Europe, Americas and Asia). It was the IRS with DDT used to eliminate malaria in Panama and Swezi canal and Australia. These IRS intervening practices have eliminated malaria and this significantly contributed and lifted up the dragged economic situations to develop as well as general health services improvement in those areas (Muhe, 2002). The subsequent review meeting about malaria global strategy (eradication programme) the 22nd World Health Assembly in 1969 decided for the eradication programmes to continue in areas with good prospects. However, in countries where malaria eradication programme appeared to be not feasible it was recommended to form transitional alternatives; for the reason that insufficient financial and human resources as well the shortcomings in basic health service amenities. The problem of resources scarcity and limited technology in Africa made countries that were involved in this project incapacitated to achieve what other fellow sister countries in other continents have achieved. Thus, at the end of the eradication programme in Africa, not even a single country attained any good results in this endeavor (Muhe 2002).

Moreover, results of studies carried out post eradication programme confirmed numerous constraints that put pressure burdens on national malaria control programmes in Africa, and

these included community practices behaviors. Some examples can be the social factors like nomadic characters population of seeking green pastures for animal grazing, refuse spraying of houses, re-plastering of sprayed surfaces (plastering the walls after spray), uncontrolled irrigation projects that creates as well as increases mosquitoes' breeding sites and, deforestations. These were some of the factors that led to the failure of the eradication programme in the continent. The World Health Organization recognized the Alma-Ata Declaration of 1978 on Primary Health Care (PHC) road map resolutions to integrate national malaria control programmes. These resolutions in 1992 were taken to use as a global malaria control strategy as endorsed by Ministerial Conference in Amsterdam, (Muhe, 2002).

Many African countries that have adopted PHC approaches, despite their attempts to integrate malaria control activities into the basic health services still are continue with resurgence. The fragmented health services delivery and weak community health education activities (to mobilize and sensitize the community members about importance of malaria prevention measures) are as yet inactive amongst health care services providers, (Muhe, 2002).

The researcher's esteemed analysis with regards the burden of malaria in African regions is that it will remain a major public health pressure to health care services delivery providers. This is because it seems these services are still dependant on curative measures rather than investing more in prevention advocacy. In Namibia, in particular, there are national programs that are solely specific health problem targeted (a single disease targeting programme). Examples are national tuberculosis control programme or national malaria control programmes. Certainly, anybody might be convinced that there is no full integration and synchronization or harmonization of distinguishable tasks between the two national programmes, but the reality is that staff that work in those programmes are exasperated by

targeting same population with similar goals. Malaria, tuberculosis (TB) and the human-immuno virus antigen deficiency system (HIV-AIDS), are all regarded as poverty associated health problems and are day to day challenges in executing policies and strategies in place for controlling these diseases; as these requires the coordinated synergy from different ministries that are directly or indirect affected. Thus all social health problems require a combination of expertise of disease management interventions.

The World Health Organization recommends that all malaria endemic countries to be self-sufficient with malaria control activities, and that they should consider employing integrated vector management strategies based on established country disease epidemiological stratification. In the case of unstable malaria, IRS is always the best intervention, as it works well in reducing the disease, it provides rapid cut-off of disease transmission within a short period, and it prevents malaria epidemics in epidemic prone areas, (Hanson, et al. 2004; Pluess, et al. 2010 and Fillinger, et al. 2009).

2.4.2 Indoor residual spraying programme in the Namibian context and history

The past and current history about malaria transmission in Namibia revealed it is dominating in the populations that live in parts of the northern belt of the country. These populations depend on subsistence farming as a common practice of living activities. These primary practices exposed them directly or indirect to mosquito bites. In the course of this assault bites by Anopheles female mosquitoes increases the chances of passing on malaria agents (plasmodium parasites) from infected person to none infected or to the already infected person and vice versa. Another way of disease transmission is by taking parasites and introducing them to none endemic area from malaria endemic areas through the movement of inhabitants. People with

gametocytes in their blood travel from endemic areas to malaria free areas and also those coming from malaria free areas to malaria areas and get infective bite and upon return back carries the parasites to their areas. This particularly took place when people travel from parts of their origin to other parts of the country to look for green pastures (sources of income) as pressure for employment. These are conditions that force majority of productive age males to leave from northern areas and assemble to towns in the central and southern part of the country or from southern and central to northern parts for economic reasons.

Migrant workers from malaria endemic to malaria free parts, as mentioned earlier, carry gametocytes in blood and will introduce the disease to free areas through vectors bites or infected vectors from disease endemic areas via transports. According to the researcher's experience there were some studies that were carried out between 1960 and 1963 prior the introduction of IRS in the country in 1965. The results revealed areas of the northern and central belts of the country acknowledged with the presence of malaria proficient vectors such as *Anopheles: funestus, gambiae* and *arabiensis*.

The first decision to start with IRS programme in Namibia was taken in 1965 and was an informed decision about vector bionomics (distribution and habits), their occurrences and behavioral variables (biting and resting inside houses). The surveys were conducted two years before the IRS was introduced, however it contributed a lot in facilitation of malaria parasite prevalence stratification process, and disease foci mapping in malaria endemic areas. The same map was up dated and used in the malaria track studies that came up after, especially in early 1980s and after independence. In Namibia, malaria vector control with IRS activities was run through with the use of dichloro-diphenyl-trichloroethane 75% wettable powder (DDT 75% WP) and continued for almost three decades before the introduction of Pyrethroids in 1991 and

from that period to-date IRS was viewed as the main and primary intervention in vector control.

IRS was devised and implemented ever since 1965 to target the places of abode in the most of the northern parts of the country from west to east. The decision to declare IRS a primary intervention was only made after independence, and what followed was the renaming of national malaria control programme to become a national vector-borne diseases control programme (NVDCP). It was also at the same time when malaria transmission patterns in the country were recognized as unstable and epidemic prone. This decision was in line with the World Health Organization recommendation that all countries present themselves with unstable malaria recommended to use IRS as a primary intervention. This strategy was regarded best to fight morbidity amongst populations and subsequently prevent epidemics and deaths due to malaria. For the fact that it cuts or shortens mosquito lives; at the same time, it is a cut off transportation routes of malaria parasite from person to person. Mosquitoes will die before parasite metamorphosis (development to sporozoites stage) is completed, preferably if residual insecticides applied on the inner surface of the house where mosquitoes usually land on to rest before or after blood meal. Ideally they will pick up a contact poison that will penetrates the nervous system and within the minimum period of five to ten hours start with body paralysis and eventually they die.

2.4.3 Community experience about indoor residual spraying utilization in the prevention of malaria in Namibia.

The Namibian communities especially in the northern part of the country have long experience with IRS since late sixties and early seventies, like our other sister countries in Southern Africa

do have this long experience about IRS. The using of the DDT 75% WP as insecticides of choice started in 1965 today ideal the insecticides usage is only in the specific type of structures (traditional mud or wood constructed surfaces) and other types of insecticides used for modern structure started after independence in early nineties. The community behavior of re-plastering the walls and re-thatching of the huts roofs after spraying were some of the factors known hampered the effectiveness of the IRS in the country. Although the country was known to sustain the IRS strategy for forty years still it seems so difficult for the community to recognize the importance of the strategy in malaria control.

According to the researcher's point of view and understanding, some community members do not support the use of DDT by the Ministry of Health to spray their houses. Thus refusal of spraying has increased among the community members. The increase of modern structures within the rural areas put pressures to the Ministry to decrease the use of DDT. Thus after independence in 1995, the country introduced the use of Pyrethroids as the second insecticides, as supplement to DDT 75% WP, to be used for spraying the modern houses structures as community morale booster to accept the IRS. Thus today you will find that two insecticides used at the same time in one house because of mixed structures (traditional and modern) in one homestead/household till to date, (MoHSS, 2005).

2.4.4 The successful story about indoor residual spraying and use of dichloro-diphenyl trichloroethane 75% wettable powder in Namibia

Although the IRS in Namibia the IRS with the use of DDT 75% WP alleged not fully accepted by the entire communities that lives in malaria endemic parts particularly the rural dwellers. The country has numerous factors that have constituted a success story with regards the IRS in

general with the use of DDT 75% WP, a significant achievement in Namibia was attained: that amongst the dominant malaria vectors species two of them (*A. funestus* and *A. gambiae*) are eliminated, their presence in the country completely declined. This evidence is given by researchers (two theses) in their reports both have indicated that due to the persistent behaviors of two mentioned species by feeding indoors and resting indoors including their high susceptibility to DDT 75% WP was confirmed eliminated. These two species are no longer easily seen in Namibia; (Kamwi, et al. 2005 and Ntomwa, et al. 2003), unpublished thesis reports and these have also further proven by the results of the MoHSS-NVDCP, annual vector bio assays and susceptibility study reports (2005 - 2010).

2.4.5 Other complementary vector control interventions existence in the country

Insecticides treated nets (ITNs) and long lasting insecticides treated nets (LLINs) method.

Mosquito nets {conventional insecticide treated nets (ITNs) and long lasting insecticides treated nets (LLINs)} have been used worldwide as personal protection from biting insects. The ITNs and LLINs offer a simple and effective means of preventing bites from infective, non-infective mosquitoes and are used to harmonize other vectorborne disease control interventions. The integration of long lasting treated materials into vectorborne disease control activities offers several advantages. The advantages vary from guaranteed unmitigated lifelong use of netting material, to provision of better protection interceptor toxicants against mosquitoes. The insecticides are bedded into the material with repellent capability, it is safer to users. LLNs withstand up to twenty washes and have up to five years lifespan or shelf life assurance, (Olyset Nets www.SumiVector.com and Interceptor- BASFAVIMA 2005). When the netting material has developed some holes in it after long usage, and was washed less than

twenty times, the toxicant will still be active to repel mosquitoes by its insecticides scent and it is that smell will prevents them from searching holes in the net. Please note that the insecticides used in treating the nets are odorless to users. All mosquitoes that will come into contact with the net will be killed instantly. Certainly, this will reduce attack rate of both infective and non-infective mosquitoes to humans. The treated netting materials will not only reduce biting attack rate but also be a toxic resting place to indoor resting preferred mosquitoes after blood meal, (Olyset net www.SumiVector.com; BASF-AVIMA, 2005 and Ter Kuile, et al. 2003).

2.4.6 Insecticides treated nets implementation in Namibia

The use of ITNs advocacy in the country started in early 1992 and went on at a slower pace because of delayed multiple ITNs projects inception procedure in different places in the country, this is accordance the MoHSS(1995),Progress report on bed net projects. The report further revealed that the re-treatment service rate of conventional nets was low because producers or the production projects did not intensify the vigorous advocacy on available re-treatment services regularly, until the MoHSS staff took the lead in community mobilization re-treatment programme. The MoHSS has realized the fact that end users of ITNs did not perceive the need for re-treatment, and also ITNs dipping procedures seemed to be a challenge to community members (end users). Consequently, it was not an easy way for them to understand all procedures, (MoHSS, 2005).

Other additional information the researcher obtained from environmental health services (1996) annual report, in Oshana region with regards the ITNs re-treatment outlet points. There was an obstacle of inadequate availability of Permethrin (insecticide for ITNs re-treatment) in

most outlet points (clinics). Reports have further revealed that community members made efforts: they several times brought in their nets for retreatment but in many occasions were sent back without services provided. The spray operators used to assist at their camping points during the spraying operation.

2.4.7 Long lasting insecticides-treated nets (LLINs)

What is a long lasting insecticides treated net?

It is a netting material with insecticides embedded or incorporated within or around its fibers and this net does not need any re-treatment for the period of its life span, and withstands more than twenty times washes. The effect of the incorporated insecticide into fibers of the netting materials remain high enough to kill the mosquitoes that comes into contact with the materials during its average life span. The net will protect the users from being bitten by malaria vector mosquitoes including other disease vector insects or vermin throughout its lifespan, provided that precautions measures should be well followed as prescribed in the instruction papers, (Olyset Nets www.SumiVector.com;BASF-AVIMA, 2005).

The LLINs as described in above paragraph are treated with Pyrethroids such as Deltamethrine 30-50mg/m² and bounds around polyester fibers, polyethylene fibers or cotton threads treated with Permethrin 1-1.2g/m² which resist for more than fifty times washes according to the international standards organization (ISO). In international markets there are also treated fabrics and vinyl material made to protect against malaria vectors and other disease-borne insects/vectors such as dengue, trypanosomiasis (changa disease) lymphatic filariasis and many others; these kind of materials are also imported in Namibia (WHO, 2003).

2.4.7.1 Advantages of the long lasting insecticides-treated nets

The use of LLINs, unlike the IRS, minimizes environmental pollution with insecticides by limiting the release of Pyrethroids in open water sources, especially during washing. It also reduces direct contact with insecticides or human exposure to insecticides as it does not need retreatment, put off insecticides handling risks in storage and netting material dipping at peripheral levels. The risk involving human contact during washing is limited except when used wrongly e.g. catching fish is high risk of contaminating water. Although its toxicant is not established being effective to high animals yet therefore it does not kill fish. In addition, LLINs are a realistic solution to ITNs (conventional bed nets) retreatment problems as highlighted above in 2.4.6 and technically there is a reduction between three (3) to four (4) times volume consumption of Pyrethroids uptakes of the retreatment. It makes the intervention practically easier, accessible to the end-users and the distributor as they are relieved from workload of retreatment. The incorporated insecticides into material fibers-formulation lessened handling of insecticides with hands by non-professionals when retreatment is done at home, (Olyset net www.SumiVector.com; BASF-AVIMA, 2005 and Ter Kuile, et al. 2003).

2.4.8 Where does Namibia stand with long lasting insecticides-treated nets?

In Namibia so far three types of LLINs are in use namely “Olyset” also known as Sumika, the “PermaNet” known as Vestgaard Frandsen and the “BASF Interceptor”. These all are World Health Organization Pesticides Evaluation Scheme (WHOPES) approved LLINs found and used in Namibia as import commodities by assortment of suppliers. Namibia introduced the LLINs in 2004 and since then up to December 2008 about 500,000 LLINs were distributed amongst populations of Namibia living in malaria endemic parts. The beneficiaries include

amongst others the pregnant mothers and children less than five years as vulnerable groups to malaria episodes, (MoHSS-NVDCP, 2008/2009).

2.4.9 Future and ultimate goal for long lasting insecticides-treated nets in Namibia

The long term plans is to have a textile production company based in Namibia to produce enough LLINs materials including the importation of the technology. This will enable the country to be self-sufficient in the supply and production of substantive quantity of LLINs to populations living in malaria endemic parts of the country. The local production initiative will enable the country to effectively deal with the efficacy resolution on Culicines species including any other nuisance mosquitoes that are resistant to Pyrethroids in the country, according to MOSSINET, 2008's joint proposal to the MoHSS.

The MOSSINET is a Namibian private company based in Otavi town responsible for production of LLINs in the country. The ultimate goal in introducing the textiles manufacturing company is to be able to increase the production and to increase the LLLINs coverage as per RBM's universal coverage goal of populations at risk of malaria in all malaria endemic countries with LLINs by the 2010 and 2011 respectively.

2.4.10 Larviciding

Larviciding is third vector control intervention designed for integrated and combined with IRS strategy and is one of the least commonly used intervention in the Namibia. The decision for the application of larvicidal was based on a clear understanding of the preferred breeding sites by the vectors, (MoHSS, 2003).

According to the National Malaria Control Policy (2005) larviciding should be propagated and advocated to be used more in urban, peri-urban areas and some selected rural areas as winter and dry season activities. An insecticide of choice for larviciding is “Temephos (Abate) 500E” which is safe and is recommended to use in drinking water so long as precautionary measures are strictly followed. The selection criteria of larvicidal is based on effectiveness of the product, affordability in terms of cost, type of breeding sites to be treated and the vastness of the areas, where the intended activities are to take place and whether it is economically sound to use at that specific area.

If the nature of water source is to be treated is turbidity, this might create negative impact on effectiveness of the larvicides. Other factors to be further considered when selecting larvicides includes the frequency of usage for the particular identified potential breeding sites by the communities around and purposes the sources are utilized for.

Precautions should be taken if the insecticides will be utilized in the conserving of plant of aqua culture or any other domesticated use because one cannot find the middle ground of safety of aqua lives; although the labels and instructions might clearly tell that the product is safe to use for treatment of drinking water source.

Larviciding is limited to influencing vector behaviors predominantly and depends on climatic conditions. It can be applied even during wet season in some regions. For example the mountains areas people predominantly carry out small water collection, compared to flattened plane areas where water bodies are huge and deep. Those areas are recommended to be treated during dry season when water becomes lesser, (MoHSS, 2003).

Larviciding is divided into two categories, namely: chemical larviciding and biological larviciding. The chemical control method consists of larviciding the water sources by applying the larvicides and upon introduction, it forms a thin layer on the water surface and this layer will reduce oxygen concentration from the water surface so that the larvae will suffocate and die. There are varieties of chemical control e.g. larvicides as mentioned earlier, carbodust (soft wood dust mixed with kerosene) and the already used engine oil.

The biological control method is by introducing the living organisms into identified potential breeding sites. These can be weakened bacteria known as *Bacillus thuringiensis Israelite* (Bti) the bacteria will then eaten up by larvae, thereafter the bacteria poison will kill the larvae by blocking its esophagus and the respiratory system. The uses of predators (aquatic life) such as small fish some of these fish will feed on the mosquito larvae and subsequently the larvae population will diminish, (WHO, 2003).

According to the researcher's experience with regards the advantage of the larviciding, it is an incredibly effective intervention in malaria control, it can be used as a community project that individual community members can be trained independently on how to use it. The larviciding programmes are used as public service driven projects and in most cases does not necessitate sophisticated techniques and can be used sub-professionals. The larvicidal targets all mosquito species (none vectors and vectors of malaria). No resistance has been established so far with regards the larvicidal. The disadvantage is that several larvicidal had a potential danger to aqua culture and environmental contamination if improperly used or handled.

2.4.11 Personal Protection

The most common practical and recommended methods for personal protection against mosquito bites in Namibia are the use of body repellents these includes body sprays (aerosols) and body creams or lotions. Wearing of long sleeved and long pants when sitting outdoors during night and certainly use of house windows and veranda doors the wire mesh screen of 110mm diameter holes to prevent mosquito from enter the house, (MoHSS 2005; MoHSS, 2003).

2.4.12 Case management

Malaria in Namibia is unstable and seasonal by nature thus, this predisposes the country to be prone to malaria epidemics. The case management was regarded as a supplementary intervention method of IRS, as this plays a major role in clearing malaria parasites from the blood stream and cures the infected individuals from malaria.

The World Health Organization recommends all the malaria epidemic prone countries to embark up on early diagnosis and prompt treatment of malaria. That early diagnosis and treatment of malaria should be regarded as the essential component of malaria case management, and thus it has big significant impact on disease transmission by preventing individuals to progress into severe state and eventually from deaths due to malaria.

In Namibia the Chloroquine medicine as first-line treatment anti-malaria was declared resistant because it was identified having high a parasitological failure rate in clearing the parasites from the human body within fourteenth days (14) of treatment. After this, Namibia was left with no option but to change the treatment policy of malaria from Chloroquine to Artemether-Lumefantrine as new first-line treatment, (MoHSS, 2005).

The advantage that Namibia gained from such a drug policy change is that the Artemether Lumefantrine is a co-formulation that has high greater impact on all stages of parasites both immature and matured into human blood. This is the sporozoites level up to the gametocytes level, a stage that is ingested by the Anopheles female mosquito during the blood meal. The medication is assured for fast recovery from illness and its effects of malaria transmission and eventually it curtails epidemics. The malaria epidemic prone countries can only achieve good results if early, correct and prompt use of medication treatment regime and regularly monitoring efficacy against the specified local/prevalent malaria parasites, (Warrell, et al. 1990).The data with regards to the disadvantages of use and prescribed the combination of Artemesinin therapy medicines (COATEM) to the first trimester of pregnancy is not well established.

2.4.13 Health education (community mobilization for involvement and participation in malaria control)

Information education and communication (IEC) form an integral part of community mobilization and sensitization to involve and full participate in malaria prevention and control activities in the country. The IEC division within the Directorate of Primary Health Care (PHC) effectively coordinates and regulates the development of materials in different programmes within the MoHSS accordingly and the national malaria control programme is not excluded.

The MoHSS is having national calendar events for purpose of awareness creation, community mobilization and sensitization and includes commemoration of national malaria days. These mainly include commemoration of the World Malaria Day (WMD), commemorated every year

on the 25th of April; the Southern Africa Development Community (SADC) Malaria Day that is commemorated on the 10th October each year, including the national malaria awareness week which starts the second week of November each year. All these events are meant to create community awareness and sensitization about malaria.

2.5 Summary

In this chapter, literature review has proven to be a potential source of information on malaria prevention and control at both globally and locally. It discloses the clandestine sheet on malaria interventions that existed in the country and how strengthen plus improving on identified existed weaknesses within the national programme. It brought home the need to consider other vector control needs assessment (VCNA). It further envisages the malaria control studies in general and was a door opener for the researcher about what is known about the national programme and to identify the uncertainty gaps and barriers at all programme levels. For example the need to have malaria indicator surveys (MIS), malaria programme review (MPR), and many other specific operational research was needed. The next chapter will cover the aspects of research methodology employed during this study as well as processes involving data collection.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This chapter will elaborate in detail the study methodology/study design employed during the research as well as criteria that was used to identify the study design, study population, sampling framework and sample size, development of instruments for the data collection, piloting of data collection instruments and the data collection methods used. The next chapter four will dealt into detailed discussions of study results.

3.2 Research Methodology

The study design most appropriate for this study was quantitative design, explorative and descriptive in nature. In this study, the researcher wanted to determine knowledge, attitudes and practices of the rural communities in Oshakati district with regards the utilization of indoor residual spraying in the prevention of malaria. All data are collected in this regard.

The researcher chose to use this method, because it was the comfortable method to use and it allows easiest way of interpretation of results in the descriptive presentations. The underlying principle is tracking the factors, investigating and presenting or describing how communities put things into practice and what ability they possessed for doing something. The search of in-depth information was needed to determine individual household heads' KAP with regards the use of malaria prevention measures. It was for the reason that the researcher was curious about collecting in detailed aspects related to knowledge and perceptions for the communities in connection with acceptance and utilization of IRS in malaria prevention. Dedicated and detailed questionnaire attributes were designed in accordance to the scope of collecting the

required data and the collected data to be expressed in statistical quantities, (Sarantakos, 2005). Furthermore, the quantitative method was chosen because of the neutrality and the precision for measuring of study variables as well as the production of the tables, graphs and figures as the modus operandi of numerical analysis. Sarantakos (2005) described this method most suitable to use for extra open-handed comparison of the study results and the common method used in surveys including other studies such as observational and experimental studies. Based on these given backgrounds about this method, the researcher was convinced to accept the method being appropriate design for his study.

3.2.1 Definition of quantitative research method

Pilot and Hungler (2006) too are cautioning researchers to be careful about the preconceived background data that might come their way during data exploration or any other perceptions. The method was a quantitative descriptive study design which is defined as the study method quantifying and counting occurrence across population figures/data and is reliably used in order to validate the overview of data yield from the study to be able to be described and interpret knowledge, attitude practices for the communities on the utilization of IRS in Oshakati district about malaria prevention measures.

3.2.2 Descriptive design

The information and substantial materials that were collected, either through quantitative method or observational, these were all descriptive materials. Silverman (2005) had made it very clear by describing the descriptive design and refers to the accurate portrayal of a particular individual into real life situations of intention to discovering new meanings beforehand. While Holliday, (2005) and Pilot & Beck (2006) singled out the primary goal for

quantitative research methodology as a description and understanding of human behavior in terms of the research participants' own beliefs, history and contexts perspectives. The method (quantitative) and its emphasis in this study involved the building of deductively based interpretations of the public (community) ideas or individual household heads. Finally, the descriptive design used in assisting researchers in describing/interpreting and expressions of respondents.

3.3 Study population

Population refers to entire set of respondents in a given group that forms the focus of the study (Brink 1996). For this study, the researcher's study population was the total population of Oshakati district; the urban and suburban populations were excluded. The purpose of only including the rural communities was based on the fact that only the rural setting structures are falling under the indoor residual-house spraying programme, the urban and suburbs are usually not targeted for spraying. The rural settings structures are targeted by MoHSS with the IRS every year.

The selection of study population was agreed upon with each rural constituency councilors' offices. The study population was drawn from the villages, in total were ten (10), and the villages are from following constituencies; Okaku; Okatana; Ondangwa rural; Ongwediva and Uukwiyuushona in Oshakati district, Oshana region. The first research population unit in this was all the households in the selected villages out of the entire great rural majority regional population as representing the population of Oshana region (De Vos, 2002).

The selection process was conducted using multiple pieces of paper; each piece of paper is written one village name, these are names extracted from the list that was acquired from each

constituency councilor's office. All houses in the two villages that were taken from each of the constituencies were interviewed. The starting point was the village headman, and then move to visit all other houses in the village. Every house in the village was taken in for interview. The number of houses according to the information from the constituency councilors, the average per village is between five (5) and seven (7) and the maximum thirty (30) houses per village, though there are with more than thirty.

There were households found without people during the study. The enumerators were advised to take records incase and continue with the next house in his/her direction. Apart from the houses without people, there were also other factors such as limited number of houses (relatively few) per village. This was related to sizes as some villages were too small; the more the village is smaller, the less number of houses will be in that particular village. There were quite a number of houses found without eligible interviewees (only the minors were present) also experienced. A second visit opportunity was given to these households but unfortunately no third visit was possible incase no elder persons were found present in the second visit. In addition, unfortunately in case of missed any household heads categories such as defaulter heads, or any other occupier between the ages of 18 and 80 and who lived in that particular house at least more than two years not found in house during the secondary visit, the third visit was impossible.

This was how the targeted total was shorter with forty eight households, and it was not possible to do a replacement. It was very difficult to make a replacement because a recruitment of extra new villages was impossible. The term "household heads" refers to the "house owner" and the "defaulter household heads" refers the "household caretaker" in the absence of the genuine owner. This situation was for example, the real household owner is living in towns and he/she

has a house at the village and only come to visit his house when necessary. In this case the care-taker is the defaulter house-owner in absence of the real owner.

Regardless of these various impediments that hampered our study population, there were opportunities for enumerators to get time to clarify many aspects in the questionnaire that respondents struggle to comprehend. Apart from these opportunities, they got the chances to do other observations, for example, on-verbal communication responses by respondents, time for answering questions and provision of valuable information. Though to some extent time-consuming, this one limiting factor because on average it took about half an hour to forty five minutes as a minimum time before the enumerator ended up his/her interview per one respondent compared to the planned twenty minutes as an average time.

3.4 Study sample

Sample refers to the sub set of the population selected to participate in a research study (Brink 1999). Out of the seven total IRS eligible constituencies, five constituencies were selected as a study sample and considered sufficient; randomly selected from as 20% of the study population in each of the constituencies (i.e. two villages with average of houses between 15 and 20 household). The total of 150 household was the study sample (two villages per constituency = 10) this was the representative sample for the general rural population for Oshakati district in Oshana region. A probability sampling method was used and the method was suitable for the study because all study elements in the population (object set) sought was having equal chance to be selected for the study, (De Vos et al, 2002; Polit and Beck, 2006). The stratified technique was used to select the constituencies and in the same way, study villages were selected as study population. The reason why the stratified sampling was used is

because the community understudy was homogenous characteristically. Means was into different stratus, (first into constituencies, further classified into villages and lastly in individual homesteads). Also further in characteristics such as, local language, gender and ages categories, and the main aim for the researcher was to ensure that the different groups and segments of the population must acquire sufficient representation in the sample (De Vos et al, 2002; Polit and Beck, 2006).

Five constituencies were randomly selected as study sample and considered being sufficient, two villages were also randomly selected from each constituency's villages name list obtained from the councilors responsible. The village names list each village was labeled with the total number of homesteads in each village. The total numbers of selected villages from all five constituencies were ten (10), and this was a 20% representative sample of the general rural population for Oshakati district in Oshana region.

3.4.1 Sampling method

The sample is defined as a subset of the entities that make up the entire population, while the sampling defined and refers as the process of selecting a portion of the population to represent the entire study population (Polit & Hungler, 2006). In this study the sample size was the total numbers of hundred and fifty (150) houses planned to be interviewed and out of this total, the houses found in all the villages during the visit and successfully interviewed were hundred and two (102) (68%) of the study population reached.

Units of study sample were the individual household heads; defaulter household's heads and any temporary occupier of the household position, in absencia of the owner found in the house with the age categories ranging between 18 and 85 years old. He/she must have stayed or lived

in that particular house more than two years. All heads of the households in the selected villages who were eligible to participate in the interviews were 18 years and above. That means in some instances there were some household heads not present at houses during the time of interview, the housekeepers were selected and interviewed voluntarily.

Gender was equally treated to avoid gender discrimination; other circumstances that the study results revealed that more household heads were women because of their great responsibilities of family health matters. In addition, women are the ones who stay behind and look after houses, because in rural settings majority men are always out with work, thus it was not easy to find them at home. During the process of study villages' selection, each piece of paper carried one name from listed villages of the constituencies. All papers were placed in a box and then well shaken before a round of picking. Enumerators were asked to pick one piece of paper as a draw, one enumerator should pick one. This was conducted on each sequence of shaking until two pieces meaning two names, of two villages drawn from each of the constituencies. All villages that were qualified in this way automatically become the representative sample of the research population.

3.5 Development of research instruments

De Vos et al. (2002), defining the questionnaire in accordance with new dictionary, that questionnaires are set of questions listed on a form which is to be completed by respondents in respect of research project. Questions were either open-ended or closed-ended question alternatively; questionnaire can also contain statements that respondents are requested to react on. For this study, questionnaire was developed containing five main sections of variables to measure primary objectives of the study. These were community knowledge on malaria as a

disease, signs and symptoms and prevention measures; about the community attitude in relation to utilization of malaria prevention measures with references to indoor residual spraying (IRS). The third variable was on community practice in relation to the utilization of malaria prevention with reference to IRS and the fourth was on factors affecting the effective utilization of malaria prevention measures by the rural communities in Oshakati district, Oshana region. The following professional researchers' phraseologies namely; "Vundule and Mharakurwa, (1996); Ettling, et al. (1994) and Koirala et al. (1998) were used as benchmarks even though some were out-dated but information was still valid for this study topic.

The researcher used structured questions, consisting of open and close questions. Some of the questions were multiple choices. The questionnaire consisted four(4) sections namely; the population characteristic (socio-demographic) data; knowledge about malaria, knowledge about IRS, the attitudes, and the last section was on practices including factors affecting the effective utilization of IRS in the prevention of malaria.

The questionnaire was developed in English and was not translated in any other languages. This was due the fact that enumerators were well prepared to translate the questionnaire into specific local spoken languages during the interviews. Prior to the pilot study and data collection, the enumerators were trained for four days on the content and administration of the questionnaire. This was to ensure that enumerators understand the content and procedure clearly. Thereafter the questionnaire was finalized for the pilot study.

3.6 Piloting of the research instruments

Prior the actual data collection, pilot study was conducted to test the validity and reliability of the instruments. The instrument was tested in the two different districts, namely Onandjokwe

district in Oshikoto region and Engela district in Ohangwena region, which were excluded from the actual data collection area. The number of the respondents participated in the piloting was less compared to that of the actual study. The numbers of household heads interviewed in each place were eight (8) in total was sixteen (16) respondents interviewed in consecutive two days.

Prior to pilot study the instrument was also discussed with peers, colleagues and the expert in the subject field as well as my supervisors for possible inputs. Throughout the process, the changes were made to structure, phrasing and wording of the questionnaire.

The modification of the questionnaire was more on questions and those found irrelevant was dropped out; the process of correcting the questionnaire took time. The researcher shared the corrected questionnaire with peers and fellow colleagues namely; Society for Family Health (SFH); Bureau of Statistics including his academic supervisors for the sake of consistency. This was good opportunity of the questionnaire getting valuable contributions from colleagues as well from the supervisors, thus, validity and reliability in data collection instrument were certainly ensured. Participants in the pre-testing neither were part of actual study nor included in parts of the region where field data collection took place to avoid bias. After piloting of instrument was completed, the questionnaire was finalized and ready for the actual data collection

3.7 Validity and Reliability of data collection instruments

Validity and reliability are both quality measures of research instruments test although they are quite different in their nature and purpose

3.7.1 Validation of the data collection instruments

Sarantakos (2005) has referred to validity as the index designed to measure and to score differences that reflect the true difference among variables to be measured rather than to randomize them. His further definition was that validity plays a role in method (quantitative) that the instruments should allow measurement correctness of the concepts in question.

Brink (1996) stated that instrument is valid when it supposed to be measuring. In order to ensure content validity, the researcher discussed the instrument with peers, colleagues and with experts in the field of malaria and research. After these discussions, adjustments were made to the questionnaire and some questions were rephrased. The pilot study was conducted as explained on page 44 and 45 of this report.

However, in this study, the researcher was comfortably convinced that the quality of his research instruments were valid because it had passed the pre-testing process of both content-validity and face-validity. Apart from that the questionnaire passed the test of content and face validity during the piloting process; the researcher did share by circulating it to some of his peers and expert colleagues in research area within and outside the MoHSS, also with other technical people in this field such as the World Health Organization staff.

Sarantakos (2005) further stated that if one asks a question about how valid an instrument is, then this question asked must be “how well does this instrument measure what the research wants to measure” and this is the content validity. During the instrument testing all the opinions and views about the set questions were all considered and incorporated.

3.7.2 Reliability of the data collection instruments

Sarantakos (2005) defined reliability in three ways. The reliability in quantitative terms refers to the capacity of measurements to produce consistent results. Instruments are reliable if it produces similar results whenever repeated. It is a measure of the followings namely; objectivity, stability, consistency and correctness or precision of instruments. According to Brink (1996), the reliability instrument is the extent to which the tool can be relied upon to give results that are consistent. This means that similar results should be obtained if the same test were carried out on more than one occasion under the same conditions; and this was assured by the pilot study results.

In this study the questionnaire was tested for the consistency of the variables and the researcher, did fixed each questionnaire with a distinctive identity number to for the purpose of tallying respondent details namely; the name of the constituency, and name of the village wherein the respondents are located. The aim of identification number was to spot the source of data in case there is a need to follow up respondents for something to be corrected if error is detected.

This was an attempt made to simplify the follow ups in case of errors that might occurred and corrections should be made to a particular questionnaire form as soon as possible, though no error was detected throughout.

Questionnaire precision, adjustment, an amendment including the modification of questions was made with references to outcomes of the pre-testing. The researcher had an authenticity of reliability in his questionnaire for the well-organized contents after careful examination of all

aspects following the pilot test and proof reading by peers and colleagues who are expert in the field of research.

3.8 Ethical consideration

The permission to conduct this study was sought from various authorities namely; the letter from the Post graduate studies of the University of Namibia (UNAM); approval letter from the Ministry of Health and Social Services; permission letter to collect data from the regional Governor and local authorities for Oshana region; the consent from the participants selected from various households (Reference: 16/08/2006 Annex C); the letter from the University of Namibia (UNAM); (Reference: 17/3/3/AP Annex C) the approval letter from the Ministry of Health and Social Services; (Reference: 14/07/2008 – Annex C) the permission letter to collect data from the regional local authority for Oshana region (Regional Council offices). Others were the request letter to collect data and conduct the study (Reference: 28/06/2008 – Annexure C); permission letter of temporary detach, from the Directorate of Special Programmes –MoHSS (Reference: 09/07/2008 and 14/07/2008 – Annex C).

The above were the means of true reflection used as official identification document proofs to the community leaders (village headmen) and to the individuals and household heads as respondents. Conversely, there were no serious ethical consideration issues with regards to this study; as a result the researcher convinced the authorities to use consent form. Certainly the pronouncement form (attached as front page of the questionnaire) was completed voluntarily by household heads with assistance of the enumerators. This was just to state that information provided by respondents will be confidential, (highly protected), their participating is voluntarily and have all rights to withdraw or refuse to take part in the study.

All headmen of villages targeted for the study, including individual household heads received the information message about the study through Oshiwambo service station radio prior the visits to the villages. That a study on malaria prevention will be conducted in their villages and these arrangements were part of protocols observed before entering into the community. Copies of the letter from the regional Governor's office were distributed and used as a means of verification at the minutes of lobbying headmen together with their communities to collaborate with researcher team.

3.9 Data collection

After the pilot study was done, the actual data collection commences. The data was collected for a period of three weeks, although it was planned to be shorter (two weeks). The three weeks was due to insufficient coverage of the study population. Initial time allocated to interview one respondent was twenty minutes (20) minimum and thirty (30) minutes maximum. Then research team used between forty five minutes and one hour per respondent. The reason interview devoted taking time was because of more clarifications of specifically the close ended statement-questions needed more time and also the participants who wanted to speak their minds because they found the session interesting. The research team comprised three enumerators and the researcher coordinator. The enumerators were trained for one week before the piloting was conducted.

The procedure followed during the data collection exercise first we started with the village headman's household and do the debrief introduction on the purpose of the visit in his village, plus verifying whether he had heard about the research to be conducted by Ministry of Health staff. Also, that the message was sent from office of the constituency councilor through

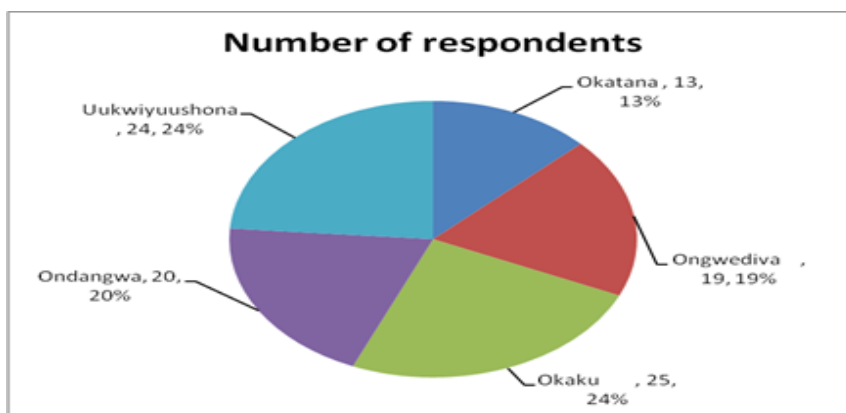
Oshiwambo radio service. This was followed by showing identification official letter from the regional Governor office with proof of official date stamp on. After finishing with the headman interview, the second house from headman's house in any direction was next for interview.

The principles was, for every household one interview, where there a household found without eligible respondent, the enumerator record if absent and promptly move to next house. In short, this was the procedure used during the interviews that were conducted in ten villages randomly selected from five study constituencies in Oshakati district. There were some few individual household heads that refused interview because of their political affiliation reasons. They were treated like household found without eligible respondent and no replacement in these cases; it caused some detrimental effect to the research outcome.

Four main variables to be measured were namely; knowledge; attitudes; practices and factors affecting the utilization of IRS by the rural communities in prevention of malaria in Oshakati district, Oshana region. The completed questionnaires for the day were brought over to the supervisor (principal researcher). This was to ensure that at the end of every data collection session, he got all the work for that particular day. The supervisor then sorted out the completed questionnaire accordingly and verified all aspects; thereafter the questionnaires temporarily stored at safe place till the next phase of results to be entered into the computer, and then data cleaned to be ready for analysis. The housekeepers or anybody else in the house as eligible respondent (means any person aged between eighteen and eighty years old and has stayed in that house for more than two years) was taken for interview as defaulter household head voluntarily. People, who lived in the house less than two years, even when they were in age range, were not qualified as eligible respondents. No spoiled questionnaires were detected throughout the data collection session, all questions asked in a sequence and answers were

either ticked in the appropriate box or written/filled in spaces provided in the questionnaire. Household heads successfully interviewed over the period of study (three weeks) in total were 102 (68%) from all ten (10) villages that were randomly selected from each of randomly selected five constituencies, (see figure 3.1 below).

Figure 3.9.1 Distribution of respondents per constituency



3.10 Summary

Chapter three described in detail the research methodology study design that was used in the study and procedures used to determine the knowledge, attitudes, practices and perceptions of the rural communities about antimalaria prevention measures in Oshana districts. Furthermore it elaborated chronological steps involved in the study methodology namely; definition of the study design concepts; the elaborations on study population; study sample; sample method, development of research instruments; piloting of research instruments; validity and reliability of data collection instruments, the ethical consideration including the data collection were the major areas covered in this chapter. The next chapter will dealt with data analysis and comprehensive study result presentations.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATIONS

4.1. Introduction

In the previous chapter, the discussion centered on the methodology used to conduct the study, while this chapter is narrative and includes statistical interpretation of results particularly in the household head questionnaire, and the findings, and all information that has been collected and gathered. The modus operandi of data analyzing comprised the use of the Epi Info package as an analytic tool and the data was presented in statistical tables and diagrams/charts, and data interpretation predominantly in narrative form.

4.2 Study findings

The knowledge, attitudes, practice (KAP) and perceptions of the rural communities living in Oshakati district, Oshana region with regards the use of malaria prevention measures was the major focus in this study, in line with the answers provided by individual household heads during interviews. The purpose or aim was to establish what knowledge and skills the rural communities possessed with regards to malaria prevention, and the questions and confirmations that were used to uproot information were in sequences of sections from section one to section four as follows:-

4.2.1 Section one: Demographic information.

The first part in this section was the core collection on the demographic information of each respondent, those the researcher has deemed necessary for the study. A grand total of 102

(68%) were respondents from ten different villages that were chosen from all constituencies selected for this study.

Item 1

As the house household head, what is your current marital status

From the total number of one hundred and two (102) respondents, in the first question of the study questionnaire in this section the results were as follows below.

- (a) The 2.9% were the household heads out of the total number of all the respondents that were interviewed were the divorced women found as heads of the households.
- (b) The other 61.7% which was overall majority out of all household heads respondents were the married men and women;
- (c) four point five percent (4.5%) were recorded as separated women;
- (d) twenty one point one percent (21.1%) were single household heads (only women found)
- (e) nine point eight percent (9.8%) were widows (only women).

The marital status in this study provided important information for the purpose of capturing individual household heads status in order to test the study assumption as alleged that “women are the majority in either ways whether temporarily or permanent household heads and very often are the ones left in houses with all responsibilities while their partners (men folk) are out working.” This was evidenced by the 67.6% of 102 respondents were women while male counterpart were 32.4%. The importance of this was that study outcomes clearly support the congruency of the prediction. Figures namely; 4.1 and 4.2; on the next page, displays

percentages of household heads who responded to the question in accordance of their marital status index representation.

Figure 4.2.1.1 Marital-status of household heads

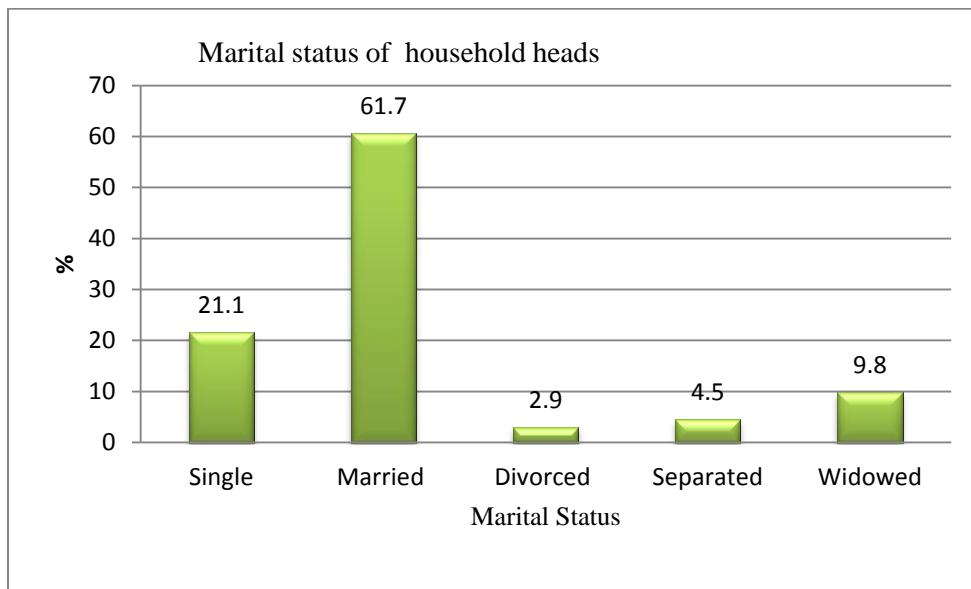
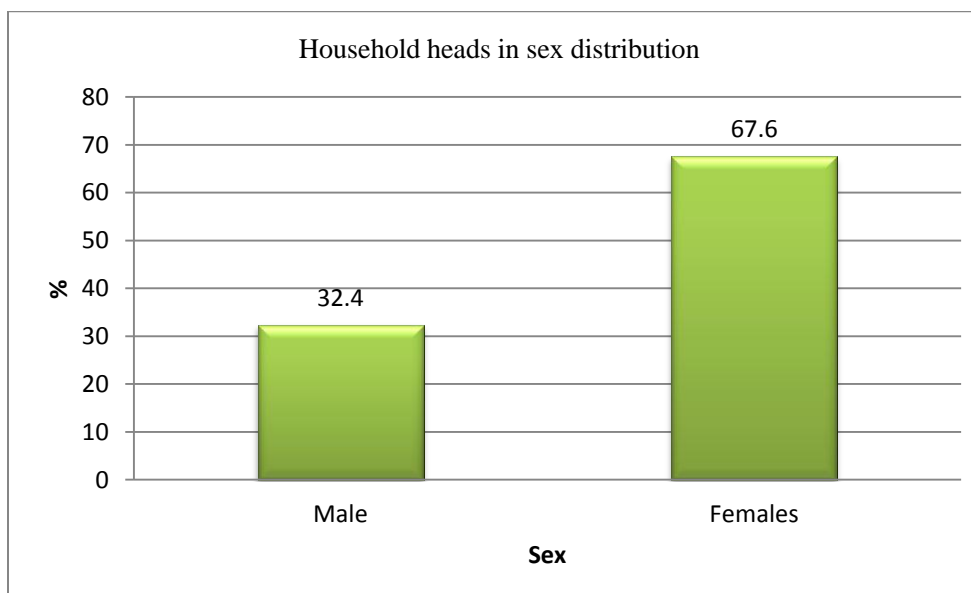


Figure 4.2.1.2 Sex distribution



On figure 4.2; results revealed women being the majority compared to the fellow male counterparts found heading households, regardless whether married, single, divorced, or widowed women. The proportion of women found heading households was significantly higher compared to fellowmen, this came out as no surprise following the study prediction that men in most cases are out of the houses due to nomadic tendencies for searching good grazing places for their cattle and for hunting jobs.

Item 2:

Total number of people living in each household, categorized by ages

Age played an important role in malaria transmission, and consequently was the reason to capture the average age-range number for the people or family per household classified as children and adults. This was needed in determining the majority of age-range desired protection, in terms of cost effectiveness of malaria control measures required for budget for each family. This is going to assist the programme planners in terms of cost proportionate estimation on protection of a specific population group particularly with IRS against the target spraying of each household; ordering ITN distribution in targeting families. In addition, data on residents who refuse spraying can roughly provide idea of how many on average age-categories estimated proportion of population group is likely to be at risk of malaria if they are left out unprotected, the study has produced the below results.

a) The adults aged forty (40) years and beyond

Adults aged from forty years and beyond, their range was flanked between “one” and seventeen people per household in the rural settings.

b) The young adults' aged 17 years to 39 years

Young adult's categories aged between seven-teen years old and 39 years old their range found flanked between the "zero" and "eight" young adults per household in the rural settings.

c) Children aged between 0 and 16 years old

Children of aged categories between the "zero (0) and sixteen years old, their range was found flanked between "zero" and "four-teen" children per household in the rural settings.

This explained that there are less young adults in the rural areas. The young adults are mostly out, to towns either for schooling and jobs opportunities. Or mostly due to seeking other green pasture circumstances which attract majority of youngsters' ages to migrate from rural areas to towns including the cities compared to number of adults and the children found in rural houses in Oshakati district during the study.

Item 3:

Main source of drinking water for your family members

This information was important to quantify the proportion of people (household heads) who erected their houses close to potential mosquitoes breeding sites. Places such as water dams or near to any kind of water reservoir (large or small), near the collection water plane or shallow wells etc. These all can be potentially risky areas as these are breeding havens for mosquitoes, no doubt there would be a larvae presence that ultimately will be hatched into adults and as a result transmission of malaria will be inevitable.

In addition it was also relevant to know the percentage of communities that have access to clean water because the hygienic practice is always linked to healthy nation building. The figure 4.3, illustrates sources of water which translates the following results.

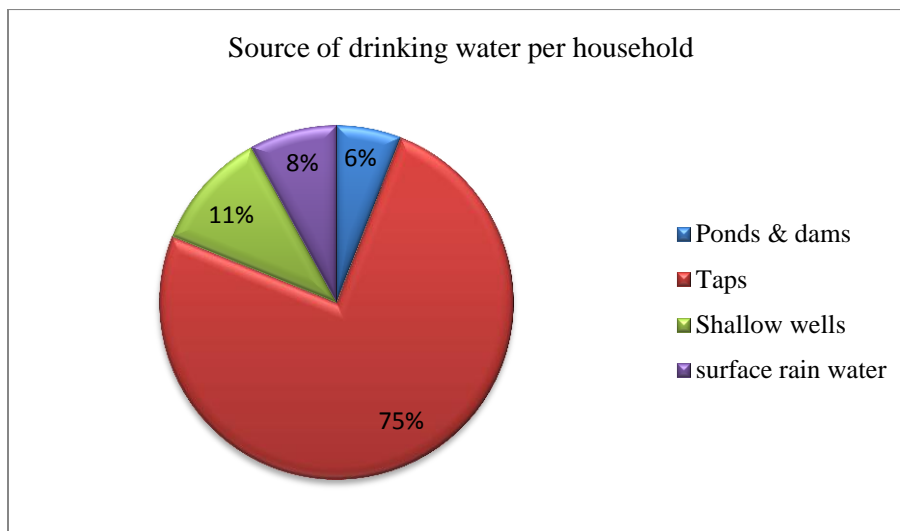
The 5.9% household heads who responded got their water from dams and ponds and the 5.2% were those household heads who responded got their water from the taps either in the house or outside the house.

The 10.9% household heads who responded got their water from shallow wells protected and unprotected. Meanwhile the eight percent (8%) were the household heads that indicated they get drinking water from surface rain water. It does not matter whether from flat pans or dams so long their houses are closer to those kinds of water bodies. The 75% respondents overall majority were found have access to piped water but did not state whether individual or public taps. Results revealed good community practices of avoiding the house sitting closer to large water sources to avoid getting waterborne or water-borne diseases such as malaria. Besides the high percentage of houses that are not exposed, results further revealed that few are exposed to the risk of mosquito breeding sites. Ultimately high exposure to the water-based diseases can exist but natural conditions such as relatively low seasonal rainfalls minimize them. Meanwhile, the piped water sources have little supportive environment for vector breeding compared to the open standing water e.g. storm water. While dams, traditional wells and flat surface plains are all standing water bodies that pose equal potential risk of mosquito breeding sites.

People living closer to these types of water reservoirs have no excuse to make them vulnerable to malaria than those are residing far away the breeding sites. The site selection for house erection plays a major role in malaria prevention.

The results presented in figure 4.3, in the next page were percentages displaying household head where their houses are found located and how they access different points of water sources during the study. This phenomenon signified good practice as mentioned earlier because at least the majority of community members did tried locating houses away from the potential mosquito breeding sites such as dams & ponds, shallow wells including the surface rainwater.

Figure 4.2.1.3 Source of drinking water per household



Item 4:

Distance between water source and household

In order to capture and quantify data on the proportion of rural communities' habitation distances between the house and water source reservoirs, this question needed careful deliberation as it tells the type of behaviors and habits of community devoted to settle near the water sources such as ponds and dams. Therefore, the question behind this was whether, they

were aware that mosquitoes breeds into the water or not. Also, if the communities were aware about the consequences of the factors that pose potential risk of malaria. Results indicated the needs to have sensitization and awareness creation in the community for them to be able to take precautionary measures of preventive measures against malaria as a good benchmark. The study results were as follows below.

The forty eight point five percent (48.5%) were the household heads (community) who responded lived at some distances and located their houses at a far distance of about one kilometer & less than two kilometers away from the mosquito breeding sites but still were within the mosquitoes flying range. These were mostly those who answered using the public or own private tap-water closer or within their houses.

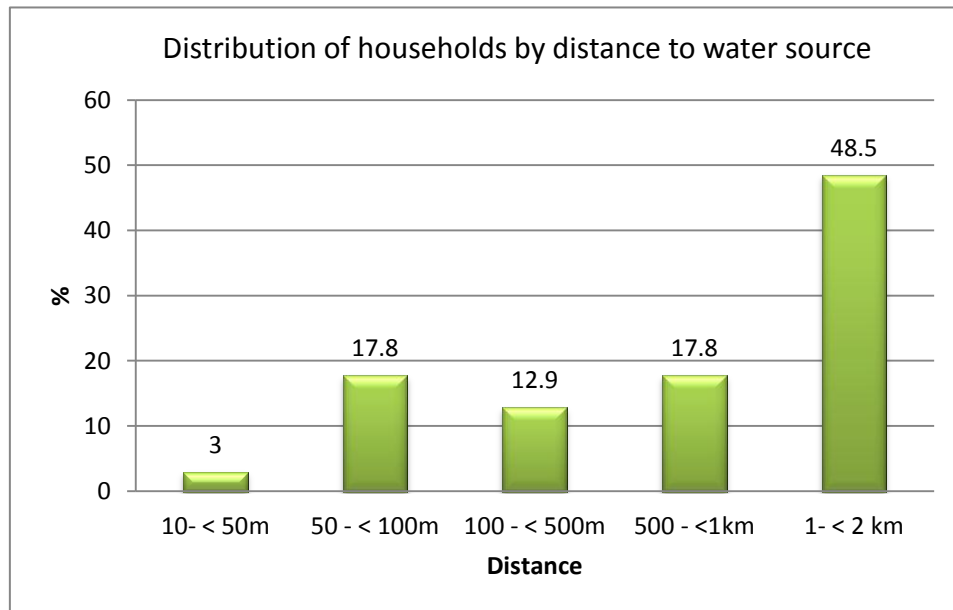
The seventeen point eight percent (17.8%) were the household heads, who responded had their houses located at a distance of five hundred (500) meters and less than one kilometer (1Km) away from potential breeding sites. These were communities identified as using the dams more often as their sources of water supply. These household heads were amongst community members found living closer to the potential breeding sites and well within the flying range.

The twelve point nine percent (12.9%) were household heads who responded located their houses at a distance of one hundred meters (100m) and less than a distance of five hundred meters (500m) away from potential breeding sites (ponds, dams, or shallow wells including the surface rain water planes) and they are more at high risk of contracting malaria.

Meanwhile the three percent(3%) were the household heads those who responded that their houses are located at the distance of ten meters(10m) and less than fifty meters (50m) distances

away from potential mosquitoes breeding sites and these community members at very high-risk of contracting malaria.

Figure4.2.1.4: Distribution of households by different distances from water sources.



Item 5 (a):

Do you listen to both, the daily radio and watch TV programmes?

This question helped the researcher to be able to categorize the kinds of information, education and communication materials flow within community and the results were as follows below.

About the ten point eight percent (10.8%) were household heads who responded listening radio and watching the television.

The five point nine percent (5.9%) were household heads who had answered neither listening the radio nor watching the TV because they never own any of these items.

While the eighty three point three percent (83.3%) household heads which was the most majority responded listening more frequently to the radio programs than TV programmes.

Results revealed that majority of rural community of Oshakati district amongst all household heads interviewed had access to radio health talk information programmes and this was 83.3% respondents of local radio programmes frequent listeners. In addition, the percentages of respondents who indicated getting their information from both radio and TV programmes including health facilities nurses was insignificant compared to the radio health talks programmes.

Item 5 (b):

The frequency of listening to radio or watching television

This question was important on the research topic in seeking of information from community members (household heads) who choose to answer “yes” to item five (a) as to how often the communities are listening to the radio or TV programmes. The aim was to establish frequencies of listening (how often communities listening or visualizing) media information programmes on daily basis. This of information will not only determine frequent circles of listening per day as communities practicing behavior but this information will also be useful to programme officers that utilized the radio to air their programmes. The information will help them to plan properly, even for the peak period for listening that suits them to air their health education programmes best. This will also enable them in reaching majority of the listeners. The outcomes of this item were as follows below.

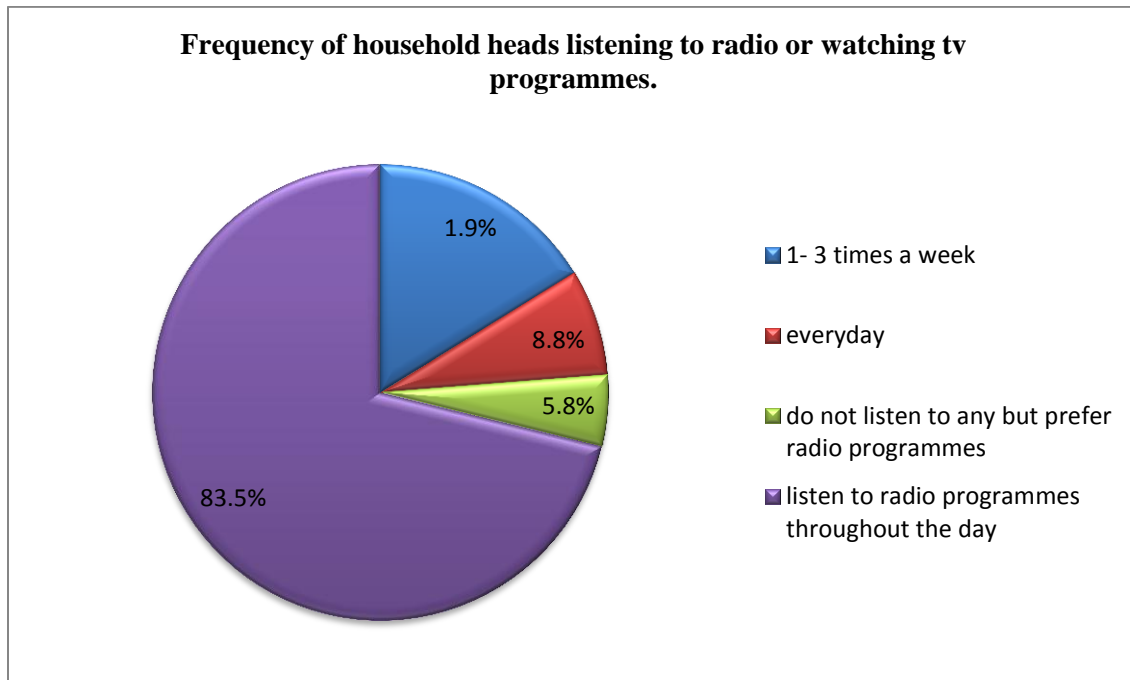
About two percent (2%) was the household heads who responded listening to radio programmes and watching television at least once to three times a week. The other eight point eight percent (8.8%) were household heads who responded listening to radio programmes including watching TV news every day. Meanwhile, eighty three point five percent (83.5%)

were household heads who responded listening to radio programmes throughout every day and were overall majority frequent listeners. One point nine percent (1.9%) was household heads who responded listening to radio programmes every day throughout but also watching TV's programmes once to three times a week.

The results revealed that majority of rural community listening more frequently to the radio health talks than watching TV programmes. However, it wasn't very clear whether it is due to preference or simply because the radio was the most affordable compare to a television set.

Based on these study results, it is important that health education programme officers and health promoters should focus on radio programmes information dissemination than airing their messages through TV programmes especially if their desire is to reach the majority rural communities with messages. The exceptions are those who answered that they did not own any of the two audio and visual electronic Medias (radio and TV) although they have indicated their preferences of listening to radio programmes.

Figure 4.2.1.5: Frequency of household heads listening to health talk radio programmes or watching TV programmes.



Item 6 (a)

The radio stations listened most

This question was to seek for information about the radio stations being used by the community very often. The information was not only determining the numbers of community members using the specific radio station programmes. But it was also going to provide ideas to health planners on communities' preferences for radio stations and programme preferences by majority listeners e.g. oshiwambo and any other dialects of communities living in Oshakati district boundaries. The results were as follows below.

About eighty six point three percent (86.3%) were household heads who had answered listening to the Oshiwambo radio service station.

About six point nine percent (6.9%) were household heads indicated preference of listening to the national radio service station. While two percent (2%) indicated not having any preferences of radio service stations that they normally listen whatever suits their needs and five percent (5%) indicated not owning any radio.

Item 6 (b)

Indicate which is your most health information source, is it radio programmes or is it TV programmes or any other please specify?

The importance of this was to seek information from the community about their sources of health information. Those have responded by stating that they listen to audio or visual media information programmes are likely getting which kind and from which type of stations (audios or visuals) Medias on a daily basis. This information will not only be important in determining numbers of individual communities that practices listening behaviors, but also to assist health education programme officers where and when to prioritize by airing their health education programmes that are targeting rural communities.

According to the study outcomes, the three point nine percent (3.9 %) were household heads who answered “No” to the question. This was because they do not tune into or listen to oshiwambo services station where health talks were always broadcasted.

The ninety three point one percent (93.1%) was the overall majority of household heads who answered “Yes” to the question because these were those who got their information from radio programmes and about three percent (3%) were neutral, they did not indicate “Yes” or “No” to the question.

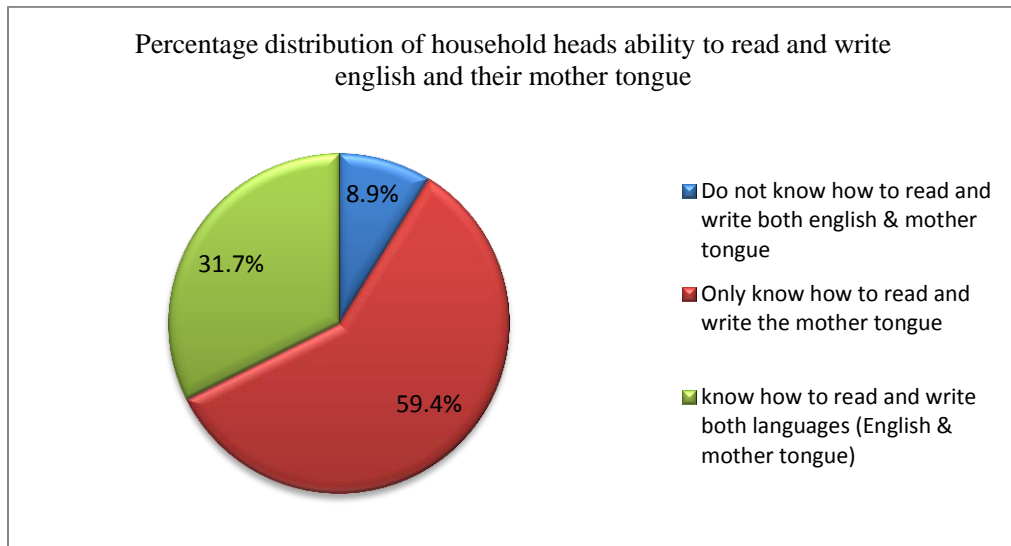
Item 7**The household heads have an ability to read and write English and their own mother tongue**

This question was important in order to establish how often communities get information on reading posters, leaflets and any other written information as opposed to getting them from listening to audio or visual media information programmes. The information will not only determine the percentage of community practicing the reading behavior than listening to radio programmes. This information will also assist the health education programme officers to plan properly on allocation of IEC materials in terms of language preferences that suit their health education programmes when targeting the rural communities.

According to the results, the eight point nine percent (8.9%) of household heads answered not knowing how to read and write, as no one from the family went or attended school.

The fifty nine point four percent (59.4%) were the household heads who answered that they know how to read and write their mother language only. Meanwhile, thirty one point seven (31.7%) were responded and indicated that they knew how to read and write both languages (mother tongue and English).

Figure 4.2.1.6: Distribution of household heads with ability to read and write English and their own mother tongue.



4.2.2 Section two: Knowledge about the disease malaria, its mode of transmission and methods of prevention and control.

The questions in this section were designed to test the level of knowledge and understanding of malaria amongst rural communities in Oshakati district. In addition, the overall aim was to test the underlying predicted assumptions that “lack of knowledge of communities about importance of using malaria prevention measures by rural communities in Oshakati district transpires poor community health education and mobilization.” In this case five constituencies amongst ten in Oshakati district rural communities were chosen being regarded as the study representative sample of the population of Oshakati district.

Item 8(a)**Knowledge of what malaria is.**

This question, its importance in seeking information on community knowledge and understanding of the concept “malaria” in this study was critical in the sense that it was the back bone of the study topic. This question was to search information that was required to answer the study’s predicted assumptions; in addition it was also trusted to draw a line between the two statements “lack” and “poor” health education and community mobilization which one amongst the two statements has transpiring community not to value IRS as malaria prevention measures? This information will not only be important in determining the numbers (individual communities) that have and those that do not have knowledge and practical understanding of what is malaria. Collected information will also assist the malaria services prevention planners to have better understanding and knowledge about the characteristics of the community settings that they are dealing with. These will enable them to prioritize the needs that can be addressed by education programmes that target rural communities.

From the study results on this question; about nine point eight percent (9.8%) were respondents who answered that they genuinely do not know what malaria is, however they did hear about it in radio talks sometime back.

About ninety-two point two percent (90.2%) were the majority of respondents who answered knowing what malaria is, its signs and symptoms. They also indicated having heard it from the radio as well as from the nurses at the health facilities.

The outcome results indicated that the overwhelming majority of the communities know what malaria is. This was an opportunity that would enable the researcher to determine whether

communities had clear understanding, which would add value to the utilization of prevention measures of malaria.

Item 8 (b)

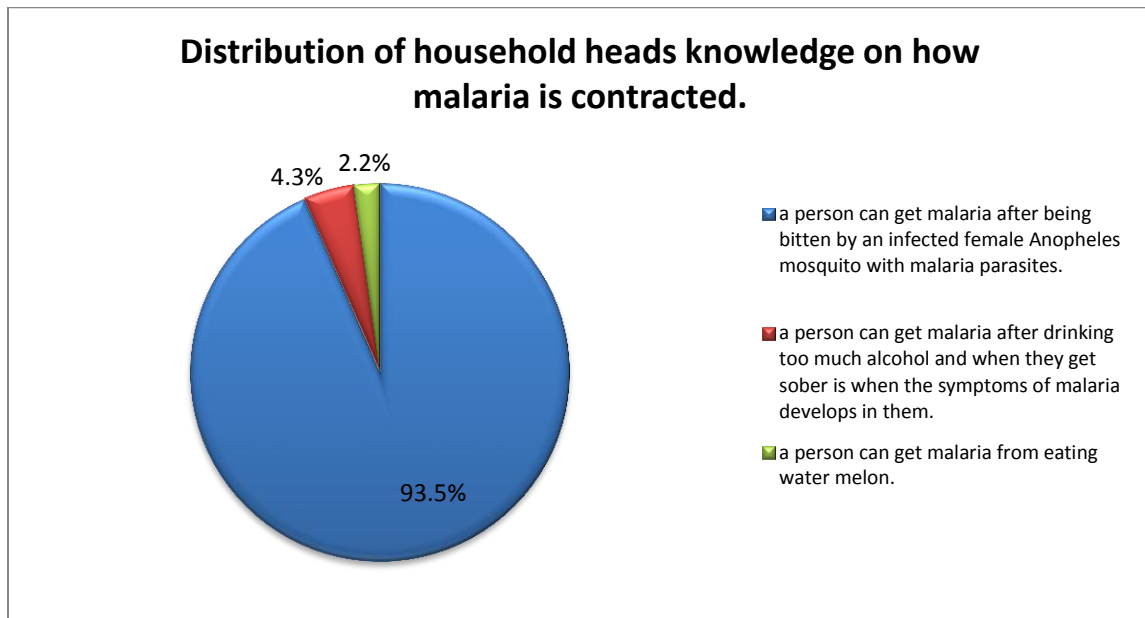
Knowledge about how a person can get malaria and from where

This was the question expected to draw the line between two concepts “community knowledge about what malaria is and communities understanding the causes of malaria in this study. The critical point for the question was to examine information about understanding the causes of malaria by rural communities. From the ninety-two respondents who answered having knowledge of malaria, the results were as follows: -

- ninety-three point five percent (93.5%) were household heads answered that a person can get malaria after bitten by an infected female Anopheles mosquito with malaria parasites
- Two point two percent (2.2%) have answered that persons get malaria from eating watermelon.
- Four point three percent (4.3%) have answered that people get malaria after consuming too much of alcohol, thereafter when getting sober (when blood level alcohol percentage drops) they presented the symptoms of malaria.

The chart no. 4.7 on the next page reflects different answers from various household heads respondents who shared what they knew about how people contract malaria into their bodies.

Figure 4.2.2.2 Distribution of household heads views on how persons contract malaria



These responses were good indicators of how health education reached majority of rural communities though there were some members that need more information in order to know what is malaria and understand how a person can get malaria. It was also a good indicator to health educators the need for expanded information dissemination so as to reach and enlighten those still not knowing how malaria is spread.

4.2.3 Section three: Knowledge and admiring of malaria signs and symptoms and practices on treatment seeking behavior.

The questions in this section were designed to test level of understanding about symptoms that are presented by people suffering from malaria and the community practices about treatment-seeking behaviors utilized by rural communities in Oshakati district.

Item 9**Knowledge of recognizing malaria signs and symptoms from others diseases that presenting almost similar symptoms like that of malaria**

This question was to test the capability of the rural communities' apprehensions about what they have been told as acquired knowledge on malaria and to test what they perceive as transferred understanding. The critical point to the question was the probing of information about acquired understanding on malaria symptoms and whether this was what made them utilize informed decisions for early treatment seeking behaviors to avoid treatment delays.

The results to the question were as follows: -

- About twelve point eight percent (12.8%) household heads answered “no” that they cannot recognize malaria symptoms of malaria from other diseases presenting similar symptoms; however, all indicated being told by the nurses that at health facilities that most patients complaining of headache, vomiting, loss of appetite and tiredness are malaria suspect sufferers.
- Meanwhile, eighty seven point two percent (87.2%) household heads have indicated “yes” that they can recognize well the malaria symptoms, based on what they were told by the nurses.

Item 10**The understanding of where communities get their information from about malaria**

In this question, the researcher wanted to understand whether communities have had any other form of educative sources of information other than the nurses. The critical point of this

question was that of probing information, of what percentage is dominating between communities using health facilities as their source of information; those communities who listen to radio health talks, and those who get information from other sources. This will assist programme officers to use variable/different means of channels of information dissemination.

About eighty-nine respondents answered having knowledge and confirmed being able to recognized malaria symptoms from that of diseases presenting almost similar symptoms. The breakdowns of results were as follows: -

- About fifteen point two percent (15.2%) respondents indicated getting their information from health nurses at health facilities during health talk sessions.
- While, seventy two point eight percent (72.8%) respondents heard it from Oshiwambo radio service station during health & hygiene talks programmes and topics about prevention of communicable diseases.
- Twelve percent (12%) respondents got their information from education and communication (IEC) materials on malaria, distributed at malaria gatherings and from the community based health workers.

These results, although appearing skewed, generally it symbolizes diverse community practices and the preferences of information source choices. Therefore rural communities' ideal choices in this study were some of the wake up calls to health educators to mobilize on health information dissemination channels.

Item 11**Information on household heads that had their family members suffered from malaria within the past five to six months prior the study**

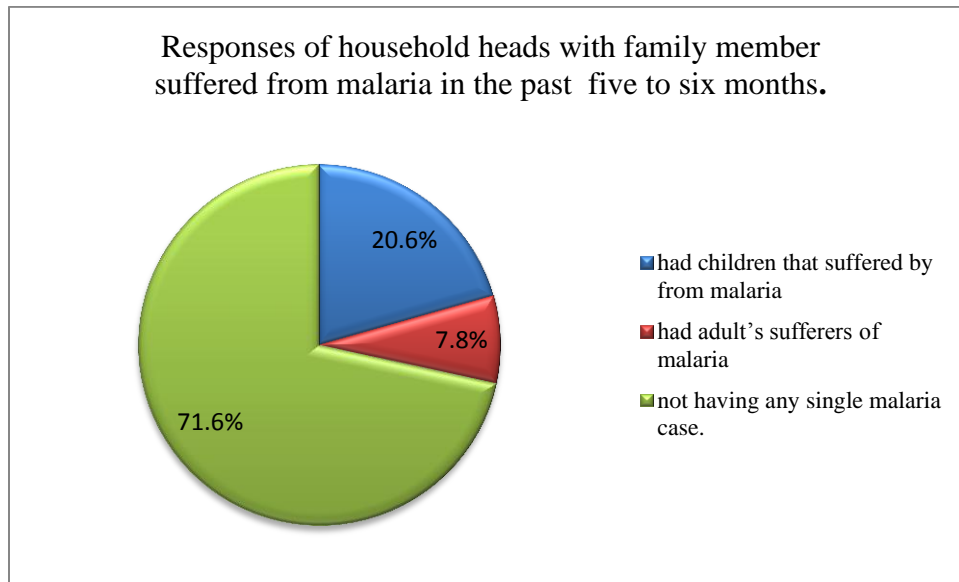
The critical point behind this question was that of probing information and measuring what capability the community possessed with regards to coping up with sick family members suffering from malaria; what do rural communities do most to save lives; do they took informed decisions to stick to early treatment seeking behaviors to avoid treatment delays.

The results were as follows: -

- About twenty point six percent (20.6%) were household heads who answered had their children suffered from malaria in the last six months before this study was conducted.
- While seven point eight percent (7.8%) indicated that they had adults suffered from malaria during the period of the past five to six months before the study convened.
- The seventy one point six percent (71.6%) indicated that there was no malaria cases in their families in the past five to six months prior the study.

The figure 4.8, on the next page demonstrates the results of different views from respondents about episodes of malaria that have affects their respective families who suffered in the past five to six months prior the study

Figure 4.2.3.1: Distribution of household heads' views regarding the status of their family members suffered from malaria in the past five to six months prior the study



We have seen how rural communities of Oshakati district had experienced different magnitudes of episodes for malaria in a given period and also according to age categories and the number of households affected. Therefore these results pointed out that the majority of the study population did not experience any case of malaria during the given period. The cases encountered in individual families of few household heads were children as they are most at risk of contracting malaria and regarded as vulnerable group compared to adults. Community experience in the disease management could not come out very explicitly here for the reason that majority of the study population were not affected but we take note of those fragmented cases.

Item 12(a)**Percentage of community members who responded seeking immediate medical attention once they get sick or their members presented malaria signs and symptoms**

The critical point in this question was that of probing information on how the rural communities practice medical attention seeking behaviors, when incident of malaria have occurred in their houses. Household heads, who attempted to give some responses, are shown by the results as follows: -

- About seventy seven point five percent (77.5%) were those who said “yes”, that they do practice good habits of seeking immediate medical attention without delay.
- Twenty-two point five percent (22.5%) were those who said no to immediate seeking of medical attention behavior in case of emergency of malaria attack.

These results are not very far from that of the outcome area results of question 14 (a) and significantly it was the same case scenario that majority study population are in favor of fighting malaria.

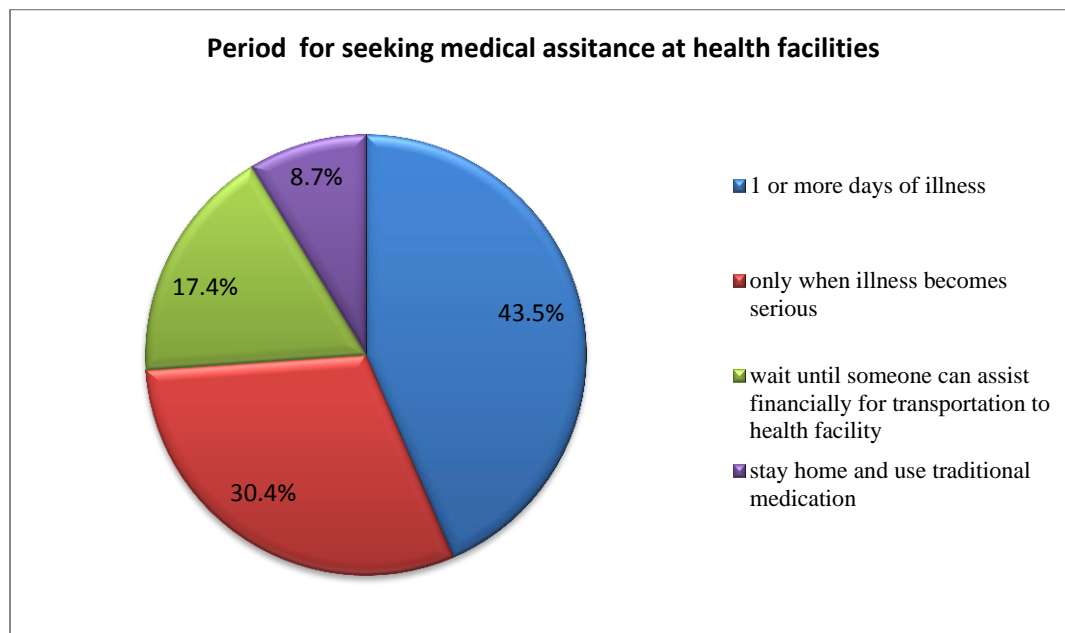
Item 12(b)**Time outline for seeking medical assistance**

The crucial point in this question was that of searching information from those who said “yes” that they do practice the behaviors of seeking immediate medical attention in how long of the time to be taken, is it immediately after the onset of the disease symptoms or immediately after one day of the onset of disease symptoms. From the twenty two point five percent (22.5%) who responded not seeking medical assistance immediately after the onset of the disease’s

signs and symptoms, the following were the results breakdown on time frames of seeking medical attention behavior.

- About ten (10) (44%) respondents indicated that it can take one or more days of illness when there is no improvement.
- While seven (7) (31%) respondents indicated that it is only when the illness becomes serious then he/she can visit the nearest health facility.
- About four (4) (17%) respondents indicated that sometimes they do not have any funds to pay for transport and hospital fees, and then unfortunately one should wait until a good hearted Samariterian will assist with needed funds.
- The remaining two (2) (8%) have said they stayed home using some traditional medicine to get well.

Figure 4.2.3.2 Period for seeking medical assistance at health facilities.



From the seventy-nine(77)(75.5%) respondents who said “yes” to immediate medical attention seeking behavior, the time frame was insignificantly separable, as the majority that is (54) (68.4%)respondents said they go within few hours of the onset of the disease symptoms. The remaining twenty five (25) (24.5%) shared the same sentiment, for example, suppose the person got sick in the evening and he/she show a stable condition then will be taken to the nearest health facility the next morning. So long this case will be treated in a time less than twenty four hours (24hrs). The immediate medical assistance seeking behavior was a benchmark time limit of twenty four hours of receiving treatment. Therefore, it is basically dependent on the severity of the symptoms from this indicated results, it was clear that majority of this rural communities were complying by keeping the required habit paradigms of seeking medical attention within twenty four hours’ time when noticing malaria signs and symptoms.

4.2.3 Section four: The practical norms and attitudes towards the utilization of indoor residual spraying in the prevention of malaria by the rural community understudy.

This particular section contained specific questions on IRS, being the backbone and critical reference of the study. The main aim and purpose of this section was to determine the proportion of household heads that has complied with the utilization norms for IRS and other prevention measures against malaria.

Moreover, it was not only to determine and describes factors affecting the effective utilization of the IRS but also to measure proportionally the percentage of individuals who had missed or refused the use of IRS and in such who did not comply with the prescribed national malaria control strategies. The third reason for this section was rather to answer the study question

about the malaria prevention measures with reference to the utilization of IRS in the prevention of malaria amongst rural communities in Oshakati district in Oshana region. This phenomenon is believed to have predisposed the situation that resulted in the low coverage of IRS in the region. Thus, this study was the trial and attempt of the researcher to arrive at valid inquiries which are relevant in providing of the right answers.

The first question in this section attempted to look at the community's status whether they are knowledgeable and aware of the existing anti-malaria prevention measures designed to combat the malaria vectors.

Item 13(a)

What were the moral values of the rural communities with regard the use of indoor residual spraying including other malaria vector control measures?

The household heads attempted to answer this strategic question, the followings were the results:

- About ninety five point one percent (95.1%) were household heads who answered being aware of IRS as one of the measure to fight against malaria vectors.
- While the remaining four point nine percent (4.9%) were the household heads who answered not being aware if IRS was the measure to control malaria, though they heard about it.

Based on this outcome results, the number of household heads who knew what IRS is used for, absorbed those who indicated not knowing what the benefit IRS would bring to them. Therefore the respondents who indicated the “no” responses was less significant compared to those who indicated the “yes” responses. The general feeling here is that from the responses

given by communities, they knew what the importance of IRS is used for and this was the aim of the study to find out.

Item 13(b)

Whether the rural communities had their houses sprayed during four months round period for the last spray season prior the study

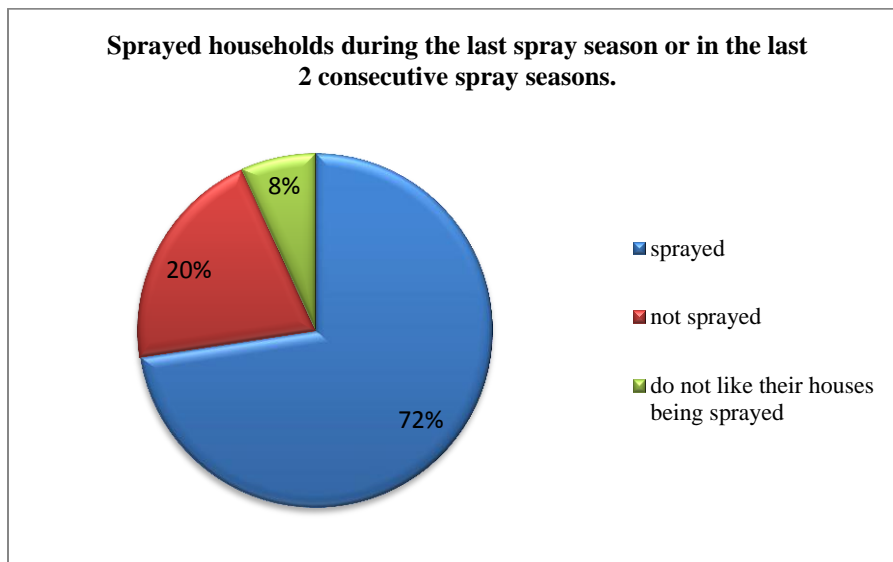
The crucial point of this question was that of searching information about household heads whether they were protected by allowing their houses to be sprayed and in terms of numbers of households that were sprayed in the last spraying season prior the study. As well as determining the number of household heads who willingly allowed the spraying. Furthermore, the aim was to search for information directly or indirectly in order to capture the information required in measuring the proportion of the individual community members who utilized and complied with the national anti-malaria control strategies. The breakdowns of results were as follow: -

- About twenty percent (20%) household heads indicated the “no” responses meaning their houses were not sprayed, whether they did not like the IRS, it was not stated.
- While, seventy-two percent (72%) household heads indicated the “yes” responses, meaning their houses were sprayed, whether willingly it was also not stated.
- The remaining eight percent (8%) indicated the “no” responses meaning not sprayed in totality, meant they refused and had stated not liking the IRS.

The chart 4.10, on the next page illustrates the picture about the situation of houses spraying during the spraying cycle that was followed by the study. Based on these results, the IRS coverage in the Oshakati district (2009) is quite high at 72% even if it never reached the required standard set by World Health Organization as the accepted standard of coverage (90%). The outcome of this question cannot be associated with the refusals due to the fact that the number on record representing refusals has less influential to low IRS coverage compared

to the full sprayed houses. Based on these results the researcher find it very trick, and irrelevant to justify that low coverage was not or was a result of community refusals.

Figure 4.2.4.1: Sprayed households during the last spray season in the two consecutive spray seasons



Item 14 (a):

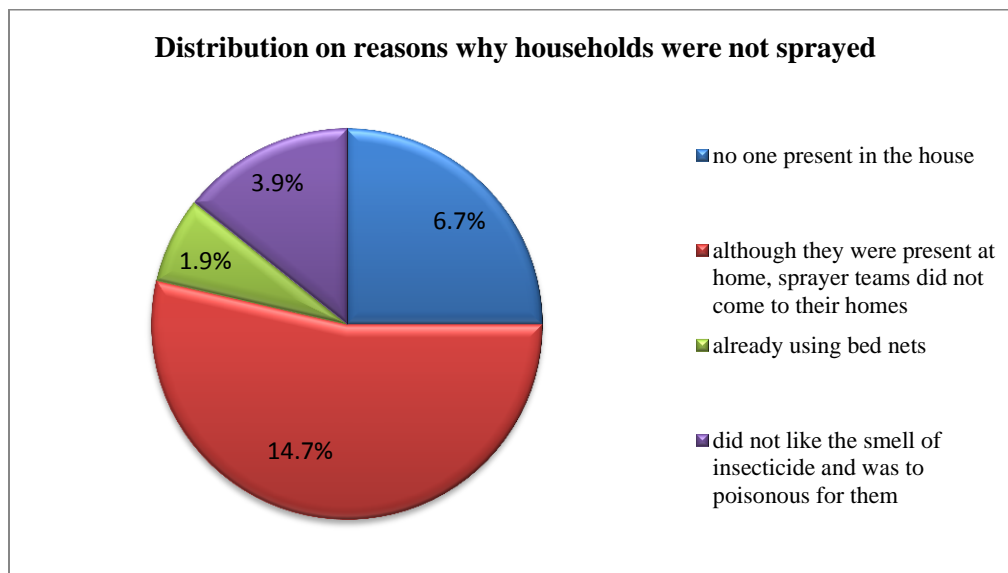
The individual household heads who give a “no” response to spraying, whether there were any tangible reasons why their houses were not sprayed

This question was top robe information from household heads about their rationale which beyond doubt prejudiced them to reject or to oppose the utilization of IR Sand whether it was a willingly refusal or was a non-prejudice induced refusal.

From the total of twenty eight (28)(7.8%) of the total household heads who attempted to give some responses to the question, their reasoning was as follows: -

- About seven (7) (6.7%) respondents said “no” because there was no adult person presents in their houses at the time the spray teams visited their villages.
- While fifteen (15)(14.7%) respondents shared similar sentiment responses that they were present at the time of the visit by the spray teams however, they did not come into their houses although warning messages from the team was sent prior their visit.
- The other two (2) (1.9%) respondents who have responded not accepting the IRS because all their house members had mosquito nets in their sleeping rooms, therefore there was no need for IRS.
- The remaining four (4) (3.9) respondents indicated that they refused the IRS because they didn’t like the smell of the insecticides that are used to spray their houses; they deemed insecticide is poisonous for them and their domestic animals.

Figure 4.2.4.2 Distribution on reasons why households were not sprayed



Item 14 (b):**What were the suggested alternatives malaria precautionary measures for use, should the household left out not sprayed during the seasonal spray campaign**

The crucial point in this question was that of searching information particularly from those who said “no” the house was not sprayed but either refused, by opportunistic way or those who found themselves in a situation where their houses were left out mistakenly by the spraying teams. What were their practical ways of life that the communities have as precautionary measures available to protect themselves or their families? The rural community members (household heads) attempted to give responses to the question and results were as follows:-

Eighty point three percent (80.3%) responded using the insecticides treated nets

The remaining nineteen point seven percent (19.7%) responded using mosquito repellents (both traditional and modern repellents).

4.2.5 Section five: Practices, perceptions and attitudes of the community how they perceived the utilization of available preventive and control measures of malaria in general**Item 15**

The item number seventeen was consisted of questions with close-ended statements used to probe information on the practical aspects on the ground to test issues of preferences and utilization of methods of prevention and control measures of malaria services rendered to rural communities by the government in Oshakati district, Oshana region.

15.1 Indicate “Agree” or “disagree” with the following statement:

Indoor residual spraying helps to repels mosquitoes out of the house when sprayed.

About eighty one point four percent (81.4%) of responded by saying that they “agree”, that IRS helps a lot against mosquitoes bites.

Other six point nine percent (6.9%) responded by saying that they “disagree” it doesn’t help at all, it rather attracts mosquitoes and other insects such as bedbugs to bite more”

The remaining eleven point seven percent (11.7%) responded by saying that they “disagree” because IRS works or helps only at the beginning (from the first to the second month) of spraying thereafter mosquitoes will start troubling people in their houses throughout the season again.

15.2 Indicate “full agreement” or “partially agree “or “do not agree” with the following statement

If the house was well sprayed, all mosquitoes entering your huts /rooms and landing on the sprayed surfaces will get into contact with insecticides, will be repelled and eventually die.

About fifty nine point eight percent (59.8%) responded in “fully agree” with the statement,

Other twenty seven point five (27.5%) responded “partially agree” with the statement

Table 4.2.5.1 Percentage distribution of head of house that agreed/ disagreed with the statement

Fully Agree	Partially agree	Do Not agree	Total
59.8%	27.5%	12.7%	100%

This is proof that rural communities who understand the importance for IRS was a clear indication that they accept the spraying for their houses. Only few (12.7%) did not agree with the statement, and on the other hand, some people did not indicate being against the spraying. Their reasoning was, they do not trust the insecticides' potency, that it strong enough to repel or to kill mosquitoes for such a longer period. They disagreed based on the assumption that insecticides used for spraying does not have a long residual effect, thus it works only for the first two months, thereafter it loses its potency.

Item 16

This item consisted of questions of close-ended statements chosen to scope information on the practical issues related to the utilization malaria prevention in the community.

Indicate “fully agreed” or “partially agree “or “do not agree” with the following statement

Any person in the family house using the LLINs (yourself included) it is an indirect protection of other members in the house, because all the mosquito gets into contact with the LLINs will also come into contact with the insecticides and die.

About forty four point one percent (44.1%) indicated that they are in “full agreement” with the statement,

Other twenty two point six percent (22.6%) indicated that they are “partially agree”

The remaining thirty-three point three percent (33.3%) indicated not in agreement with the statement.

The majority of 44.1% of respondents have indicated in full agreement with the statement, this gives is an indication that the community has good understanding of the importance of mosquito net usage.

Item 17

Indicate “fully agreed” or “partially agree” or “do not agree” with the following statement

LLINs can protect you from mosquito bites even if you are not sleeping under it, provided that it is hanging alongside your bed.

The nine-teen point six percent (19.6%) respondents indicated “fully agreed” or in “fully agreement” with the above statement.

The other thirty seven point three percent (37.3%) household heads were “partially agreed” or partially in agreement; meanwhile, the forty three point one percent (43.1%) “do not agree” with the statement.

Although this statement might be correct, the communities did not believe that it is effective in malaria prevention. Some theoretical and practical empirical tests by World Health Organization (WHO) support this statement because the outcome results were that when mosquitoes entered into a house. Before it tries to reach the human being in that particular room or hut, first it has to land somewhere to the nearby object or anything so long it is closer

to where the person is in the room. Usually they land on the closest objects to the bed, this can be a wall surface, wardrobe, hanging clothes, curtains, hanging mosquito net etc.

Thus, if a mosquito net hung alongside the bed even if the person did not tuck into the bed then mosquitoes can land on the net before touches the victim. The mosquito upon landing on the net will be exposed to the insecticides and it will die on the spot or some minutes later depending on the exposure time. Even if it flies off in the long run it will die because of the insecticides that it came into contact with.

Item 18

This question was built with two questions to convoy the one close-ended statement to collect information about practical habits related to preferences and utilization of malaria prevention and control behavior.

Indicate “fully agreed” or “partially agree” or “do not agree” with the following statement

You will benefit from double protection by having your house sprayed and that family members simultaneously use the LLINs.

The ninety two point one percent (92.1%) were the household heads responded “agreed” or were in “full agreement” with the statement.

The other five point nine percent (5.9%) were those who responded being “partially agreed” or “partially agreement” with the statement and the two percent (2%) were those who responded “disagreed” with the statement.

Many household heads from the first to last interview sessions have sided in favor of agreement than disagreement with the statements and it is clear that they have had an

understanding of what was important about anti-malaria measures. This was direct contradiction to the study's postulations, as speculated that most rural community members do not have knowledge or the understanding and this is what has built up the factors that contributed to IRS usage declining.

It is for this reason that based on results (more 90%) was the overwhelming majority of the respondents have indicated in favor with the statement. Thus, lack of knowledge, understanding and the importance of the anti-malaria measures and cannot be seen as a contributing factor attributing to the refusal of spraying.

Item 19

Since you are fully or partially agreed with the previous statements, suppose you were given a task to encourage your neighbor, friend or relative who refused his house to be sprayed, what will you use, that could be your strong point to persuade him/her, so that next time he/she should accept the indoor residual-houses spraying or long lasting insecticides nets use?

The rural community members on the side of their level of awareness creation as persuasions to fellow community members accept the IRS to become their number one preferred anti-malaria measure were suggesting the followings: -

The eighty five point three percent (85.3%) were those household heads who indicated one common sentiment said that they will tell their neighbors about spraying that it saves lives; if neighbors can just allow their houses to be sprayed because mosquitoes that come into contact with the sprayed wall surface will die before transmitting malaria agents to their people.

That the spraying will not only prevent mosquitoes from coming into their houses but will also protect them from other insects that may spoil their wood work and those that are nuisances in their homes.

The others that were about fourteen point seven percent (14.7%) have responded in common sentiments and have said that they will tell neighbors, friends and relatives that spraying alone is much better than the use of the long lasting insecticide-treated nets (LINs). Because with the LLINs people needed to hang it up and tucked them into the bed to make sure mosquitoes should not get entry inside .Sometimes, a person might have a fan and be under the influence of alcohol, he/she might forget to hang his or her long lasting insecticide-treated net up or tucked under the beddings. In this situation, the person is unprotected and the chance of being bitten by mosquitoes and the risk of getting malaria will be high.

But, if this person had slept in the room or hut that was sprayed then he or she will be 100% sure of protection, even if this person might not able to cover himself or herself under the blanket or hung up the LLIN. This is because the insecticides that were deposited on the wall surfaces would have repelled or killed any of the mosquitoes that might enter in to his or her sprayed rooms and huts.

Item 20:

This item was an open-ended question to collect information about views including the thoughts and opinions on aspects related to preferences and utilization malaria prevention.

As a member of the public do you have any concerns about malaria control services or anything you would like to see government doing in order to make extra improvement to provide better services for malaria control?

This question was designed to generate information from the side of the community concerning their personal and individual views, expressions and expectations from the Ministry; concerning the malaria control and prevention services rendered to them either by the community based health workers or by the malaria prevention/healthcare services providing teams e.g. nurses, environmental health officers and the spraying operators in the region/district. The results were as follows below-

The seventy nine point four percent 79.4% were the respondents sharing common sentiments suggested to the Ministry to intensify the community based health education agendas on malaria prevention so that the inhabitants/villagers who are settle in deep rural villages and settlements also benefit from these kinds of health talks.

They also raise concern that GRN should increase the number of resources (spray operators, transport and equipment) if they want to cover many villages with IRS as much as they can. The other concern raised was that the current available resources seen in the district as whole, during the spraying season cannot cope with the burden of workload. Considering the time-frame of spraying is short this result to many houses in the villages left out untouched because of time and inadequate resources (the number of operators we see in our villages carrying out the spraying activities).

The others were twenty point six percent (20.6%) who have shared their common thoughts and suggested to the GRN that there is a dire need for increasing of number of health facilities in the remote areas and as well as to increase the hours of remote area clinics operations during malaria season

Increased of nurses' hours at clinics if possible during the malaria season, so they can work on weekends and public holidays.

The results of this question raised the concern that some community touched on the issue of many houses being always left out in villages untouched for the reason that inadequate resources and is insufficient number of spray operators. Also, issues of time for spraying operation of starting and finishing on a short specified or allocated time versus the number of spray operators. This is the moral fiber that flanked side to side within the research topic of the study and it becomes a bit clearer that low IRS coverage should be connected to the identified inadequate resources particularly the number of spray operators versus time-frame, than to associated it with community refusals behaviors.

4.3. Summary

This chapter dealt with data analysis, discussion and interpretation. It was in this chapter the study assumptions were comprehensively tested and analyzed in detailed through apparent analogy of snapshot investigation. Based on the study findings, about the knowledge, attitude and practices in the utilization of malaria prevention measures with reference to IRS was critical to know how communities perceive the utilization of malaria prevention measures in Oshakati district. In some of African countries KAP factors observed that obstruct the effective implementation of the antimalaria measures, was to be found as a result of poor population or community participation in the general anti-malaria measures. The next chapter will be the discussions of the study findings, limitations, conclusions and summarizing study recommendations.

CHAPTER 5

RECOMMENDATIONS, LIMITATIONS AND CONCLUSIONS,

5.1 Introduction

In the previous chapter, the discussion centered on the narratives and descriptive interpretation of results particularly the findings, including any other information that has been collected and gathered during the field work. The modus operandi of data analyzing comprised the use of Epiinfo package as analytic tool and all data was presented in tables and pie charts.

Chapter five will deal with the narrative summary of study objectives interpretations, recommendations, limitations and conclusions.

5.2 Study objectives conclusion

5.2.1 Findings and conclusions in accordance the study objectives

5.2.1.1 Objective one

The objective was to determine the knowledge of the rural communities on utilization of IRS in prevention of malaria. The aim of the objective one according to the researcher was achieved, because based on the study outcome, majority of the respondents, seventy four (74) (72.6%) respondents out of 102 interviewed indicated their houses has been sprayed during the spray round prior to the time the study was conducted. Twenty one (21) (20.6%) indicated that their houses were not sprayed, and they did state their reason why, only seven (7) (6.9%) respondent indicated their houses not sprayed in totality and stated that they do not like the IRS. From this total of (28) (27.5%) of the household heads attempted to give reasons why their houses were not sprayed; the seven respondents (7) (25%) houses were not sprayed because no adult person was present at the time the spray teams visited their villages. Fifteen (15) (53.6%) shared similar sentiment that they were present at time of the visit but the spray

teams did not come into their houses. Two (2) (7.1%) shared similar sentiment that they did not accept the IRS because house members had mosquito nets therefore there was no need for IRS. Four (4) (14.3%) refused because they didn't like the smell of the insecticides that are used to spray their houses. Ninety seven (97) (95.1%) were the household heads who answered had been aware of IRS as one of the measures to fight against malaria vectors and only (5) (4.9%) answered not aware that IRS was the measure to control malaria, but they had heard about it.

On the knowledge about malaria, a total of ninety two (92) (90.2%) out of the 102 interviewees indicated having the substantial knowledge and understanding of what malaria is, how it is transmitted and what are the causative agents including the prescribed preventive measures.

Only ten (10) (9.8%) of the respondents (household heads) indicated that they were not sure what malaria is and how it is transmitted. Almost, ten percent of the respondents refers (3.9%) said a person gets malaria after consumption of alcohol, while (5.9%) believed malaria can be transmitted from eating much of water melon before their actual peak period (April/May) time. This is a sign that health education about malaria has reached a massive number of the community members, apart from the few that might be missed due to the mode of information dissemination or there could be a need of expanding the community educational strategy for mobilization and sensitization on malaria from where it is currently to a house to house level. This can be achieved through the community based malaria ambassadors by targeting to reach more and more villages and it should not be planned only for Oshana region but can further be applied to other endemic regions targeting remote areas populations.

5.2.1.1.1 Objective one conclusion

It should be concluded that rural communities for Oshakati district in Oshana region have wide knowledge on malaria and their understanding on prevention measures also noted being higher compared to a moderate number of some who possessed limited knowledge and understanding for malaria prevention because : -

A significant number of eighty nine (87.3%) have potential capacity to recognize the symptoms of malaria very well, 95.1% knew the importance of IRS; 72% had their houses sprayed. To compare with the relatively small number (thirteen) about 12%, that are not able to recognize malaria symptoms but have heard it from nurses when they visited health facilities and 4.9% not aware of IRS as a prevention measure of malaria. The study results revealed an important contributory factor to the limited knowledge identified being insufficient information dissemination through information communication education message materials. This emanated from a tendency that MoHSS have of developing the inadequate information materials namely; the information, education and communication (IEC) in indigenous or local languages. And the fact that the alluded inadequate IEC materials are printed in English and thus has created communication barriers as many of rural community members can only express themselves in their native languages. Thus, about 59.4% have answered that they knew how to read and write the mother language only, compared to 31.7% who answered knowing how to read and write both languages (mother language and English).

Some respondents indicated the need for IEC materials, particularly posters and leaf-letters. According to some of respondents who worked in health facilities as cleaners said IEC

materials produced specifically for malaria messages were not even available for display in the health facilities where they are working.

It is therefore recommended for the MoHSS to consider printing translated IEC materials messages on malaria into specific native languages of specific targeted communities and print supplementary materials to the currently available quantities the ministry used to produce for distribution countrywide. IEC materials should be reviewed periodically to fit the needs of the local languages, spoken by the specific targeted communities and should also be equally distributed, especially during the malaria seasons' awareness campaigns in order to address the imbalances by permanently removing the languages barriers which proliferate discrepancies in knowledge and understanding of anti-malaria prevention messages amongst the rural communities.

Based on the study results with regards to objective one, the researcher hereby advice the health education or health promotion teams when disseminating their malaria messages them should at least continue to make use of and focus more on the local radio service stations because of the study findings that 83.3% of respondents are listeners of the radio programmes. Already this is a good indicator that overwhelming majority of the community members can be reached through local radio services stations.

The school health program teams in the regions, particularly those in malaria endemic regions country-wide should incorporate malaria snapshot health education messages on malaria in their curriculum. Develop, print and distribute malaria messages comic booklets that display variety topics of malaria prevention measures to attract school kids and also encourage pupils at schools to devise tales and comic strips on malaria prevention.

This possibly will eventually create influential malaria awareness amongst the populations living in malarious areas as well as arouse the realization of the importance of utilizing malaria vector control interventions. This will be a big move on knowledge transfer by carrying it over to their parents at home including fellow contemporaries in the villages.

Other wakeup calls from the study results is that majority of the respondents (community members) seventy two percent (72.8%) have answered that they get malaria information from the radio (Oshiwambo service station) particularly during the health and hygiene-talk radio programmed education about the basics how to prevent the communicable diseases in general.

5.2.1.2 Objective two

This study objective was to describe the attitude and practices of community utilizing the IRS in the prevention of malaria. The aim of this objective was achieved; looking at the study outcome, a significant figure of the study population who indicated accepting a variety of anti-malaria measures was higher than what the study was predicted. The total of eighty three (83) (81.4%) were household heads who believed that IRS assisted them against mosquitoes contact (bites) when their houses were sprayed, compared to the relatively small number of seven (6.9%) of respondents who decline that IRS does not help at all. They believed that IRS rather attracted mosquitoes and many other insects-pests such as the bedbugs and when irritated by the IRS do more biting. The other figure of twelve (12) (11.8%) were the respondents that had shared the same sentiment in being in agreement that IRS works, however, they felt that it was just at the initial stage of the spraying, after three to four months mosquito will start troubling with biting people again in their sprayed houses throughout the season.

With other anti-malaria prevention measures there were those respondents who had preferences of what type of anti-malaria measures suits them, nevertheless the majority were still the household heads who preferred to use the insecticides treated nets (ITNs). Thus eighty two (82) (80.3%), of the respondents were those who favored ITNs use while twenty (20) (19.6%) of respondents were in favor of using other methods such as use of repellents. Among this group includes even those preferred the use of traditional repellents a traditional herb known as “etselyakuku” and other modern repellents including the space spraying with aerosols.

If one has to do some allusion to these descriptive results that the household heads established the use of one or more prescribed anti-malaria prevention measures or the methods of malaria prevention. Furthermore, the overwhelming substantial number of ninety four(94) (92.1%) confidently have answered that they were in full support and favor double protection interventions. This meant the combination of IRS and long lasting insecticides treated nets (LLINs) or conventional insecticides treated nets (ITNs). The six (6)(5.9%) of the total respondents (household heads) indicated not in favor of IRS but much favored the use of LLINs/ITNs and the remained two percent (2%) were neutral.

Based on the study results as far as the objective number two is concerned, the researcher identified the dire need for the malaria control service providers in the MoHSS to strengthen and stick more into community mobilization and sensitization campaigns as part of their preparations prior to launching any strategies of malaria vector control activities. If possible they can do village to village campaign visits especially those targeted for either IRS or LLINs distributions. Another way should be the carrying out of behavior communication change targeting education programmes though some of these are long impacts interventions. The campaigns should include target messages such as: -

- “Accept IRS it serve lives”;
- “Keep your home free from mosquito habitation by screens on your windows”;
- “Use or sleep under the LLINs/ITNs, protect your family from mosquitoes bites”
- “Malaria is curable, seek early treatment to your nearest health facility” and
- “Always learn how to recognize malaria signs and symptoms”

Just to mention some few examples of targeted messages that can be used as weapons of effective community mobilization campaigns for anti-malaria prevention measures for awareness creations.

There is also a need for the MoHSS to embark on peer community-based health educators’ machinery targeting house to house education programmes especially the hard to reach villages in the malaria endemic regions by malaria prevention services. The kinds of campaigns must also target the community structures such as politicians (constituency councilors), churches (pastors) and traditional leaders (village headmen) as these are the major community entry points. Other communication educational channels available for use are community based aural media such as local radio stations; community self-channeled health fairs (folk dramas and traditional concerts that talk about malaria mosquitoes bite prevention) this should be organized during community rallies, parades and other important community events.

The cross-border malaria issues should also be considered important as malaria and as diseases do not respect borders. So where there are bordering communities, there should be a harmonization and synchronization of malaria prevention targeted messages and activities.

Others are vector control interventions synchronizations between the bordering countries on malaria prevention e.g. IRS campaigns should start simultaneously on both sides of the

borders. However, for evaluation purposes it is recommended that these strategies should be an informed decision driven and monitored by SWATO analysis approach. The SWATO analysis should be time-honored driven situational analysis results obtained through prior implementation of memorandum understanding agreements (MOU) between our countries. Strengthened the integrated vector management (IVM) activities are described being the best weapon to achieve good results for malaria control and ultimately malaria elimination.

5.2.1.1.2.1 Objective two conclusion

To conclude these deliberations, the study findings were that majority of the community members (household heads) as respondents were found practicing most and favored usage of prescribed anti-malaria prevention measures compared to a relatively small number of those who indicated being neutral (not liked IRS or the use of LLINs/ITNs).

There were no tangible reasons stated especially by those few who pin-pointed dislike of the usage of DDT by the Government of the Republic of Namibia (GRN) to spray their houses though they preferred other insecticides in use for the spraying of houses. This ultimately and most importantly point to the fact that they preferred other anti-malaria prevention measures such as using combination of the mosquito repellents (modern and traditional repellents) rather than residual spraying.

5.2.1.1.3 Objective three

It was to determine the factors affecting the effective utilization of IRS by the community. The aim of this objective was achieved, looking at the study results signifying figures for study population who responded and indicated compliances with a variety of prescribed anti-malaria measures. The study found out that amongst the public respondents (household heads), the

majority who participated in the study has shown best practices in the usage of available anti-malaria prevention measures.

This is proven by a number of descriptive results that appeared in the report about the health services seeking behaviors, the total of eighty (77) (75.4%) were respondents (household heads) who stated that they do seek medical attention within 24 hours of the onset of the disease. Even though twenty three (23) (22.5%) respondents who indicated the opposite said no to the question, it was not that they were unwilling to visit the health facilities within 24 hours. But this was due to the circumstances of social factors such as unavailability of transport because of distances to access to the health facilities. Other factors they have pointed out were the unavailability of the funds to pay hospital consultation fees and poor information communication as far as hospital fees were concerned amongst the individual of affected families.

Other study results on community compliance were related to vector control measures e.g. eighty three (83) (81.4%) acceptance of IRS teams to spray their houses, 56 % of respondents willingly accepted IRS; and ninety (94) (92.1%) were in full support and favored double protection interventions. Also the eighty two (82) (80.3%), were those who favored the LLINs/ITNs usage. These were amongst the evidence based results that concluded that majority of respondents were aware of the importance and use of anti-malaria prevention measures with reference to IRS and were compliant with them besides the few as reported earlier.

The researcher's point of view on the study findings that even so, on IRS and other intervention acceptance by the communities, there were some isolated cases of community

members refusing uses of the services. A deceptive scenario that is perhaps associated with ignorance on the side of few community members who do not value the GRN inputs into malaria control in general; particularly those who failed to make use of the free-of-charge services. The researcher was of the opinion to give wide advices especially to constituency councilors when approaching their communities to include hints of the lookout on GRN related projects budget expenditures education to their communities. This is vitally important for community to know how much the GRN conceived losses to some of the kind public/community development national projects if the community did not make use of those amenities.

Malaria prevention health care services provision is a sole responsibility of a caring government and is the best practices that community members required to comply within every aspects of creating healthy living conditions. The information dissemination prior any actual malaria control activities seasonal campaigns should be a comprehensive responsibility that requires inter-sectoral collaboration between government spheres. The disadvantage could be that in most cases, malaria control campaigns are loud into central points, which messages are put into perspective cross over village to village or constituency to constituency. This was proven by answers from respondents (household heads) who said sometimes the spraying teams caught them unprepared as a result it become difficult in removing all stuffs as part of preparing rooms/huts to be ready for spraying.

5.2.1.1.3.1 Objective three conclusion

There was attention paid to services e.g. those who willingly show interest to buy the LLINs/ITNs and willingness of owning LLINs/ITNs including usage; the acceptance of IRS

and the usage of variety mosquito repellents (tradition and modern); all these were the clear demonstration of best practices and consequently is the proof of compliance to available prevention measures reassurance.

The researcher however deserved the privilege to conclude that both good and bad practices were widely established particularly community customs or habit of using anything that they think can work well for their daily life. Some individuals use what they think are the best strategies available to their disposal to protect themselves against mosquito bites. A clear example here can be that of the information on records that, communities use to get the free of charge LLINs/ITNs and use it for the right purpose. Others tend to use them for fishing as well, while others prefer not to use them for anything and are just kept. For IRS, houses get sprayed thereafter the owner washes off the applied insecticides on the surfaces/walls or re-plastering. There were some isolated cases of some individual respondents who said they preferred not to use any of prescribed malaria prevention measures.

In cases concerning family members that get fever and present symptoms resembling to malaria, medical-treatment-seeking behaviors are on time although this was found that it varies from individuals. Visiting health facilities occurred between first and third day of illness depending on individuals' perceptions, delays in medical-attention-seeking behaviors sometimes always associated with the lack of transport, hospital fees and improper decision making due to scanty information on right medical service choices. The study assumption that consecutive annual low IRS coverage over the years recorded in the region emanated from lack of proper community approaches on mobilization and sensitization. The results revealed overwhelmingly that there is knowledge and understanding amongst communities on all aspects of anti-malaria prevention measures.

5.3 RECOMMENDATIONS

The Government of the Republic of Namibia and its partners in malaria control should make efforts to embark capital projects and allocate enough financial resources in order to build more health facilities. These will relieve the community members from traveling long distances to access the health services at identified hard to reach areas in seeking medical treatment.

The information about free of charge malaria treatment nationwide should be made available to the population. The responsible stakeholders must be tasked to disseminate this information to the recipients of the services at all health facilities countrywide.

Behavior change communication needs to strengthen especially in remote areas of malaria endemic regions, during the malaria season. IEC materials should be reviewed periodically to fit the needs of the local languages, spoken by the specific targeted communities and should also be equally distributed, especially during the malaria seasons' awareness campaigns in order to address the imbalances by permanently removing the languages barriers which proliferate knowledge and understanding discrepancies of anti-malaria prevention messages amongst the rural communities.

The high refusal rates, lack of community mobilization, knowledge and experience amongst the services provision as a direct causal effect of the low IRS coverage are all insignificant. This was established to be associated with inadequate resources especially the number of spray operators against the period set to finish spraying the specific number of targeted structures at specific particular time. Therefore, the government should make efforts to increase the number of actual spray operators plus their operational equipment in the regions. This should be

calculated based on the planned number of days and specific number of structures targeted to be completed with spraying at a particular time.

More IEC materials should be developed, printed in the local language spoken by the specific targeted communities and should also be equally distributed, especially during the malaria seasons' awareness campaigns in order to address the imbalances by permanently removing the languages barriers which proliferate knowledge and understanding discrepancies of anti-malaria prevention messages amongst the rural communities.

The government needs to have sets of bylaws devised and promulgated to regulate the malaria control services supported by the Public and Environmental National Health Act (which is in a Bill state at the moment). Should it become an Act of Parliament then there is urgent need to draft a national Legislation on the vector-borne diseases control programme so that it can address the issues of community compliance (individual community members) to be IRS specific.

5.3.1 Proposed further research

Literature review revealed that there was no scientific research conducted in Namibia on vector species; information about vector species are widely distributed in the country however, it is too scanty and out-dated, because these is more than three decades old. Based on this argument the researcher is considering the need to conduct an accurate and scientific baseline data on vector species distribution in Namibia to be conducted as a matter of urgency.

In addition, during detailed deliberations with the public, significant concerns and details about why communities are refusing the IRS, some possible contributing factors came out and it was alleged that the causes are connected with inspired beliefs in the communities. That the

DDT which Ministry of Health and Social Services is using for spraying the rural community houses causes infertility (in women) sterility (in men) and lowering the IQ level in the young ages when they directly or indirectly contact with DDT. Particularly when ingested in food chain, these beliefs alluded being amongst other things intensifying fearfulness and worsening the situation, by contributing some few individual household owners (heads) refusing their houses to be sprayed.

In the early seventies some observed phenomena were that of small domestic animals dying e.g. when houses after being sprayed with DDT the cats were reported dying after eating dead rats that are killed by DDT and the chickens too died when they fed on insects that have been killed by the insecticides. These were some of scandals and rumor believed being fuelling the community to refuse on DDT use for spraying their houses.

This kind of situation, according to some of the anonymous Environmental Health Officers interviewed as part of public/community, said this is what made things difficult for them to convince some of household heads that current DDT in use is totally different from the that of early seventies. To convince them to accept all structures in their houses to be sprayed with DDT, especially the sleeping rooms/huts she said is really difficult even up until today.

Based on this kind of arguments the researcher was adequately persuaded to recommend for a study on DDT usage for spraying rural houses to be conducted in order to substantiate and test some of these mentioned factors. It is a policy that this insecticide is only limited for use on traditional houses not modern or zinc constructed houses.

The researcher further suggested the similar but comprehensive KAP study need to be conducted considering taking one or two samples in each region. As this study was small and

was limited to academic purposes (was limited to Oshana region) only. Hence it was not enough to interpret the true picture countrywide though it was a representative sample of the regions that are conducting IRS in the country. The proposed study should exclude Oshana region, but the same study should combine both rural and urban dwelling communities.

5.4 STUDY LIMITATIONS AND CHALLENGES

5.4.1 Introduction

The following were considered as the different research limitations that the researcher has encountered and are limited to four phenomenal characteristics. These include scanty information on KAP studies related to IRS conducted in Namibia, it was not found anywhere whether published or unpublished. Time was a limited factor to a number of planned respondents to be interviewed in a day, the planned time was thirty minutes per interviewee however, and even the researcher found himself taking between 45 minutes and one hour to finish one interviewee.

Another limitation was the insecure syndrome in the respondents' limit to divulge some wanted information and this is what caused the interview process to spend more time digging valuable information.

The replacement of houses found especially without owners present during the first and second visit is considered a limitation. The four mentioned above were regarded as limitations in this study and here are the deliberations on each aspect.

5.4.1.1 Scanty information

During conducting of literature review the researcher had difficulty to obtain relatively in-depth information on previous community KAP studies conducted on malaria prevention specifically on IRS. This was one of the areas identified as an information gap. There is no presently published sufficient community knowledge; attitudes and practices study information on malaria control or on malaria prevention measures conducted in Namibia. The existing published information about vector bionomics, prevalence vector species and vector population distribution in Namibia is out dated. This particular study was conducted by late Botha de Melon a South African famous medical entomologist and this was between 1963 and 1965 prior to IRS introduction in Namibia and this information now out-dated. This why the researcher indicated the difficulty he experienced with citing some of those materials as references; all reference books copies found with information related to IRS history about Namibia were almost forty years old and above. The published information references about community KAP studies available on global level with sufficient reference to African countries, and some were of very recently conducted studies on malaria control variety interventions. The good materials that are relevant to the research topic were those of Southern Africa Development Communities (SADC) reference materials.

5.4.1.2 Limitations with regards the study respondents

The initial study plan was to interview the study population between eighty five (85) and one hundred and fifty (150) household heads. The plan was interrupted due to unexpected factors, which the researcher could not detect during piloting time or else could be rectified earlier. As a result, out of the initial total planned study population between eighty five and hundred and

fifty (150) household heads, one hundred and two (102) which was 68% were reached and successfully interviewed.

The interruption factors referred to some villages where the household heads during the visiting time were found not present in some of the houses. Not even a defaulter household heads were found, only minors. At some points researchers were informed that the parents went for pension day or travelled to wedding ceremonies. Then in such incidence it was obviously those circumstances that we have to re-schedule for another day to come back to that specific residence.

The second interruption was the interview time; initially the planned time was a minimum of thirty minutes and maximum of forty five minutes per participant. We found ourselves in a situation whereby the interview lasted for a minimum one hour and maximum one hour and half per participant and eventually it was an accepted situation. This was simple a deal because for a participant to give the accurately information needed, more time per participant needed to allow more detail discussions and explanations. Furthermore, this study was a reference to the theory of Susan Haack an English professor of philosophy and law at the University of Miami in U.S. and her colleagues (Tramel, 2007). The theory was referring to respondents who were so eager of giving what they think could be the right answer but not that it is the most honest answer. That the knowledge is a belief that can be justified if it is coherence with other beliefs a person holds, each beliefs is justified if it coheres with the overall system of beliefs.

The believer must be able to justify a belief through internal knowledge, external or outside sources of knowledge that can be used to justify a belief, (Tramel, 2007). The purposes of linking this study topic to epistemological theories was based on hypotheses and assumptions

of the study topic connected to the characteristic factors underlying the population under study. The example of the characteristic factors were such as “IRS refusals” and as it was believed being emanating from beliefs and such beliefs can be justified by other characteristic factors, for example the “lack of knowledge”. The assumption was the referred study connecting factors and its example can be the “IRS refusals” and “the low IRS coverage”; of which the study imagined these factors emanated from lacking of correct information and understanding of the importance of malaria prevention measures amongst the rural service recipients of which in this case are the communities.

5.4.1.3 Limitations with regards to time factor

As stated above in the earlier paragraphs of this report that this study was expected to cover total planned study population of a minimum of 85 to a maximum of 150 household heads. But due to time constraints and other unnoticed factors such as important national days (pension days), were some of the factors that imposed the absentees of households heads/owners during the visiting time. As a result it implicated there scheduling of visiting time whereby it further put pressure to relocation of the overall study duration from two weeks to two weeks and half. The second factor about time-factor was community social time or the self-entertaining time (time of visiting the coca shops and shebeens) was one of the stumbling blocks to the research team. The re-allocation of visiting time was also affected that instead of conducting the visit throughout the day it was interrupted and we re-scheduled to visit from 07h00 to 14h00 for the day. The community members after 14h00 are already at coca shops, which make the situation very difficult to conduct interviews. Withdrawal by some of the interviewees from the study did also affect staff time.

5.4.1.4 Limitation with regards to insecure in divulging of information

Concerning the ethical issues, community members interviewed also felt insecure to release information e.g. those who get education tips from the anti-dichloro-diphenyl chloromethane (DDT) these were individual non-governmental community based organizations about the negative effects on DDT to humans, animals, and the environment. Limited (IEC) materials have been distributed to the community members particularly those that did not possess and own radios for listening but have had no language barrier problems. The political influences to certain extent did limit free expression in the (some household head limited their responses) to some of the study questions due to political reasons and fear for security upon possible divulging of some confidential information.

5.5 SUMMARY AND CONCLUSION

The study was conducted to understand the knowledge, attitude of rural communities in the utilization of IRS in the prevention of malaria in Oshakati district, their practice and perceptions linked to malaria prevention measures. The overall study aim was to assess knowledge, attitude and practice and to determine the factors affecting the utilization of IRS amongst the communities Oshakati district in Oshana region.

In conclusion, the study results established that the annual low IRS coverage in the district had a co-relationship with insufficient number of resources particularly the spray personnel allocated to the spraying programme to cover all targeted structures in a specified time period were not sufficient enough and that could be the reason why there is low IRS coverage in the district.

In addition to increasing the number of spray personnel and availability of spray equipment will possibly be the ultimate solution to the problem. There are some areas of research that were identified as dire needs for example the use of DDT for houses spraying which implicated the poor IRS coverage through refusal and whether DDT has created fearfulness amongst the communities. Equally identified areas were the malaria vector behaviors and species distribution in the country; the impacts of malaria control interventions, particularly vector control in-relation to case management.

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ANNEXES

Annex A: Consent Form

Good day, I (full name), hereby representing the Ministry of Health and Social Services, which is the custodian of health affairs of all Namibian population in the country. I am a member of the team of people who are here in your village today busy conducting an interview to some of the household heads on malaria prevention. This study is an official programme looking at the knowledge and perceptions of the community about indoor residual spray of houses in your region.

There are some few questions I am going to ask you with the aim to collect some information from you on the issues I have mentioned earlier. The information we are collecting from you will be much useful to our Ministry to be able to plan better the health services provision to the community and to individuals like you.

Your house is one of the few houses has been selected in this village for this study and you as a head of the house you are going to participate in this study as a respondent on behalf of your family members that are living in your house. The information you will give me here today will remain a confidential thing. I am not going to take your name all what I am going to require from you is to answer all the questions that I am going to ask you, feel free to give your answers to all the questions.

Your participation in this study is completely voluntarily and it is your democratic right to participate or to refuse and you will not be affected in any way if you decided not to participate in the study.

If you have any question or any concerns after this interview, you call at this number 0812495525 of the survey supervisor, Mr. A. Hans Angula, (the enumerator then introduce himself or herself by the name and show his/her identity card, plus the copy of the official letter from the Regional Governor's Office).

If you agree to take part in the study, I would like further to request you to sign this letter as an indication that you are voluntarily agree to participate and I am not going to take much of your time but only ten minutes.

Do you agree to participate in the study?

Yes, I voluntarily agree to participate in this study	
No, I don't want to participate in the study	

If the answer yes, please continue with interview and finish, if the answer is no then terminate the interview.

Signature or initialling the interviewer's name

Annex B: Study questionnaire

This questionnaire is designated for the household heads interview and it is an administered questionnaire the enumerator is required to conduct the interview by asking questions from question one through all sections to question twenty. The enumerator should tick the box against the relevant answer given by the respondent. Where there are dots provided the enumerator is expected to write in full words as said by the respondent.

Respondents are expected to answer all the questions.

<u>Section one: Population characteristic- Socio-demographics data</u>		
Q. serial no.	Questions' details	Questions' responses
01	As household head, can you please tell me what your current marital status is?	I'm single, not married <input type="checkbox"/> I'm married <input type="checkbox"/> I was married but now divorced <input type="checkbox"/> I was married and now I'm separate with husband <input type="checkbox"/> I'm a widow <input type="checkbox"/>
02	Can you please tell me how many are you living in this house (total numbers of people live in your house, and their age categories? (Give numbers accordance their age categories)	Adults <input type="checkbox"/> Young adults <input type="checkbox"/> Children <input type="checkbox"/>
03	What is the main source of drinking water for you and your family members in your house? (Enumerator must tick the relevant box)	We use public tap water <input type="checkbox"/> We use shallow well drinking water <input type="checkbox"/> We use borehole pump water <input type="checkbox"/> We draw water from the flat plane water (Oshanas) <input type="checkbox"/>

		<p>We use water from the stream <input type="checkbox"/></p> <p>We draw water from dam/ponds <input type="checkbox"/></p> <p>Others water sources (specify)</p>
04	<p>What is the estimation of the distance from your house to the water source (a distance between your house and the water source)? (NB: Enumerator should asks this question only if the water source is among the followings:- plane surface rainwater (Oshanas), river-stream, dam/ponds or others but rain water)</p>	<p>100m + away from our household <input type="checkbox"/></p> <p>250m + away from the household <input type="checkbox"/></p> <p>350m + away from the household <input type="checkbox"/></p> <p>500m + away from the household <input type="checkbox"/></p> <p>Less than 1.5km away from the household <input type="checkbox"/></p>
05	<p>a) Sources of health information, please can you tell me, do you listening to both the radio and TV daily programmes?</p>	<p>Yes, we do listen to the radio and watch television programmes as well <input type="checkbox"/></p> <p>Yes, the radio health talk programmes listening only <input type="checkbox"/></p> <p>No, we do not listening to radio nor watching TV because we don't have any of these <input type="checkbox"/></p>
	<p>b) If yes to Q 5, about the radio/television how frequent do you listen?</p>	<p>We listen to radio and television health talk/show programmes very often <input type="checkbox"/></p> <p>We listen to radio and TV programmes almost every day and normally the news <input type="checkbox"/></p> <p>We listen the radio programmes every day and watch television programmes at least twice or more in a week <input type="checkbox"/></p> <p>We only listen to the radio programmes every day, we don't have a TV at home <input type="checkbox"/></p>

<p>06</p>	<p>a) Which stations do you listening very often? (NB: This question is applies to radio listeners respondents only)</p>	<p>National service station Namibia Broadcasting Cooperation (NBC) <input type="text"/></p> <p>NBC local language service station/Oshiwambo service station <input type="text"/></p> <p>Others radio stations or TV channels (specify) </p>
	<p>b) Do you get some messages related to health information, health talk messages from the radio or TV programs?</p>	<p>Yes, we do get information materials and most listening from the radio health talks programmes <input type="text"/></p> <p>No, we don't get any health information materials, and we don't listen to radio or watching TV <input type="text"/></p> <p>Yes , we do get information material from the nurses <input type="text"/></p> <p>Others sources of information (specify) </p>
<p>07</p>	<p>As family do you have difficulties in reading and writing the official language (English) including your own mother language?</p>	<p>No, we read and write both the English and mother language <input type="text"/></p> <p>Yes, but the English, not the mother language, <input type="text"/></p> <p>Yes, we have difficulties both read and write English but we can express ourselves in the mother language <input type="text"/></p> <p>Others problems (specify) </p>

Section two: General Knowledge about malaria as a disease, its transmission and methods of prevention and control		
Q. series number	Question details	Questions responses
08	a) Do you know what malaria is?	<p>Yes, I know what malaria is <input type="checkbox"/></p> <p>No, I real don't know what malaria is, but I use to hear about it from the nurses at the clinic <input type="checkbox"/></p> <p>Others information you about malaria in general (specify) </p>
	b) If the answer to Q. 8(a) is yes, where do people get malaria from?	<p>A person can get malaria after being bitten by infected female <i>Anopheles mosquito</i> with malaria parasites <input type="checkbox"/></p> <p>People get malaria from eating water melon <input type="checkbox"/></p> <p>People get malaria after drink alcohol and get drunk when recovered from drunkenness (become soba) then they show up malaria symptoms <input type="checkbox"/></p> <p>I don't have an idea <input type="checkbox"/></p> <p>Others causes for malaria that you know (specify) </p>
Section three: Knowledge and admiring of malaria signs and symptoms and practices on treatment seeking behaviour.		
09	Can you recognize the symptoms of malaria from other diseases which presenting almost similar symptoms?	<p>No I cannot is difficult for me, only the health workers can recognize if we go to the clinic <input type="checkbox"/></p> <p>Yes I can and normally if one of our family peaks up this symptoms we immediately rush to the clinic seek for treatment <input type="checkbox"/></p> <p>We get information from the health workers at health facilities <input type="checkbox"/></p> <p>Through radios and other local news medias <input type="checkbox"/></p> <p>From reading IEC materials e.g. brochures on malaria prevention and control <input type="checkbox"/></p> <p>Other ways (specify)</p>
10	If the answer	I, get my information from the radio

	<p>to Q 9is Yes, where do you get this information from?</p>	<p><input type="checkbox"/></p> <p>I, get my information from the clinic nurses</p> <p><input type="checkbox"/></p> <p>I get information from the leaflets information about malaria</p> <p><input type="checkbox"/></p> <p>I get information from the radio and other local news medias</p> <p><input type="checkbox"/></p> <p>Any other sources not which is mentioned here (specify)</p> <p>.....</p> <p>.....</p>
<p>11</p>	<p>a) Any one of your family members suffered from malaria within the last five to six months?</p>	<p>One or more adults in our house had malaria episode</p> <p><input type="checkbox"/></p> <p>One or more children between 0 and five years old had malaria</p> <p><input type="checkbox"/></p> <p>One or more pregnant mothers in our house had malaria.</p> <p><input type="checkbox"/></p> <p>Nobody have pick up malaria in our house this year</p> <p><input type="checkbox"/></p>
<p>12</p>	<p>a) What do you do if you realise that someone (a family member) in your house presents the signs and symptoms of malaria?</p>	<p>If it is day time we go to nearest clinic without delay</p> <p><input type="checkbox"/></p> <p>If it during the night we wait until morning to go hospital or clinic</p> <p><input type="checkbox"/></p> <p>Any time we rush to the nearest hospital or clinic after the onset of signs and symptoms</p> <p><input type="checkbox"/></p> <p>We sometimes delay to go to hospital or clinic with two to three days of illness before we take him /her for treatment.</p> <p><input type="checkbox"/></p> <p>Any other habits of seeking medical attention (specify)</p> <p>.....</p> <p>.....</p> <p>.....</p>
	<p>b) Do you go for treatment as early as possible or immediately after the onset of the signs and symptoms?</p>	<p>Yes we go as quick as possible</p> <p><input type="checkbox"/></p> <p>Yes, but only when the disease is too severe if not we wait the next day</p> <p><input type="checkbox"/></p> <p>Yes, but if no money we stay until someone with good heart assist with transport and hospital fee</p> <p><input type="checkbox"/></p> <p>No, we wait until the person get well unless the illness become serious then we can go to the hospital or clinic</p> <p><input type="checkbox"/></p> <p>Any other method you do to save your family in seeking medical attention (specify)</p> <p>.....</p> <p>.....</p>

	<p>If the answer to Q 12(b) is no how long does it take you to seek medical attention at the nearest health facility?</p>	<p>After two or more days of illness, if the person don't get well <input type="checkbox"/></p> <p>Only if the illness become more serious <input type="checkbox"/></p> <p>If we get financial assistant from the neighbours on time, because sometimes money for hospital fees is the stumbling block <input type="checkbox"/></p> <p>Stay at home for more days and if the patient does not improve then we go to the nearest health facility <input type="checkbox"/></p> <p>Wait for the next day and if the condition does not improve then we can visit the nearest health facility <input type="checkbox"/></p> <p>Treat with traditional medicines or sometimes use the left over tablets by family members <input type="checkbox"/></p> <p>Any other you think do work for you (specify) </p>
<p>Section four: The IRS practical norms by rural communities (household heads) and their moral values with regards the utilization of the IRS in malaria prevention; this includes other malaria control interventions.</p>		
<p>13</p>	<p>a) Do you know or aware that the indoor residual spraying programme (IRS) is used for purpose to prevent malaria?</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p>
	<p>b) NB: If the answer to Q13.1 is "Yes" continue ask the respondent whether his/her/their house was sprayed during the last spraying round prior the study, if the answer is "No" go to question 14(c)</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p>

<p>14</p>	<p>a) If the answer to Q13 (a) is “No” give reason why your house was not sprayed?</p>	<p>(NB: Enumerator write/fill in a narrative of the answers given by the respondent in the below space).</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
	<p>b) Since your answer to the first question was “no” to IRS would please tell me what methods do you use other than IRS to prevent yourself and the people in your house against malaria mosquitoes?</p>	<p>Use of aerosols space spraying and mosquito repellents; <input type="checkbox"/></p> <p>Use of the insecticides treated nets (ITNs) /long lasting insecticides-treated nets (LLINs) <input type="checkbox"/></p> <p>Any other methods used against mosquito bites not mentioned (Specify)..... </p>
	<p>c) Since your answer to the first question (Q13 (a) was “No”, would you please be kind and tell me your tangible reason/s why your house was not sprayed?</p>	<p>I do not like the spraying, because it is a health risk to us all in the house including our animals <input type="checkbox"/></p> <p>I do not like the spray because it spoil furniture as well as house wall surfaces paintworks <input type="checkbox"/></p> <p>There was no adult people in the house during the time spray teams visited our village, <input type="checkbox"/></p> <p>The spray team had just spray few huts halfway then they run out of insecticides and leave promised to comeback and they did not comeback, <input type="checkbox"/></p> <p>We were in the house waiting for the spray teams to come but they did not to our house to spray. <input type="checkbox"/></p>

	<p>b) Do you fully agreed/partially agreed or disagree with the below statement?</p> <p>You yourself or one of your family members or any other person stay with you in the house, using the LLINs to protecting himself/herself against mosquito bites. This is also an indirect protection to other people in the house. Because the mosquitoes that enter in the house will be in contact with LLINs and die afterwards as a result there will no chance to bite you including the rest of the people in the house.</p>	<p>In full agreement with the statement <input type="checkbox"/></p> <p>In partially agree with the statement <input type="checkbox"/></p> <p>Not in agreement with the statement <input type="checkbox"/></p>
16.	<p>Do you fully agreed/partially agreed or disagreed with the below statement?</p> <p>Any person in the family house using the LLINs (yourself included) it is an indirect protection of other members in the house, because all the mosquito gets into contact with the LLINs will also come into contact with the insecticides and die</p>	<p>In full agreement with the statement <input type="checkbox"/></p> <p>In partial agree with the statement <input type="checkbox"/></p> <p>Not in agreement with the statement <input type="checkbox"/></p>
17	<p>Do you fully agreed/partially agreed or disagreed with the below statement?</p> <p>LLINs can protect you from</p>	<p>In full agreement with the statement <input type="checkbox"/></p> <p>In partial agree with the statement <input type="checkbox"/></p>


	services providers are not doing it well and what areas would you like to see government has made some improvement in order to get better services?
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Thank you so much for your valuable contribution and your time

Annex C: Copies of permission letters

a) This letter for permission to conduct the research was offered by the University of Namibia as a proof to the student that his proposal get approval for him to carry on with his MPH study and to conduct his field data collection as proposed, thereafter then continue with the write up to finish his thesis report and final product submission

UNIVERSITY OF NAMIBIA
Private Bag 13301, 340 Mandume Ndemufayo Avenue, Pionierspark, Windhoek, Namibia



FACULTY OF MEDICAL AND HEALTH SCIENCES

**Letter of permission:
Post graduate students**

Date: 16.8.2006

Dear Student: MR AH Angula

The post graduate studies committee has approved your research proposal.

Title:	<u>Knowledge, attitudes and practices of malaria prevention with reference to indoor residual spray programme in Oshana Region</u>
--------	--


You may now proceed with your study and data collection.

It may be required that you need to apply for additional permission to utilize your target population. If so, please submit this letter to the relevant organizations involved. It is stressed that you should not proceed with data collection and fieldwork before you have received this letter and got permission from the other institutions to conduct the study. It may also be expected that these organizations may require additional information from you.

Please contact your supervisors on a regular basis.

Faculty representative on Post graduate committee
UNAM
Prof A van Dyk *A van Dyk*
FACULTY OF MEDICAL AND
HEALTH SCIENCES
P/Bag 13301 WINDHOEK
Date 16/08/06

b) A letter for permission from the Ministry of Health and Social Services (MoHSS) to conduct the research. This permission letter was offered by the Office of the Permanent Secretary -MoHSS through the Research Unit committee – Directorate Policy Planning and Human Resources Development in the MoHSS.



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REPUBLIC OF NAMIBIA
Ministry of Health and Social Services

Private Bag 13198 Windhoek Namibia	Ministerial Building Harvey Street Windhoek	Tel: (061) 2032562 Fax: (061) 272286 E-mail: mzauana@mhss.gov.na
Enquiries: Ms. M. Zauana	Ref.: 17/3/3/AP	Date: 17 March 2008

OFFICE OF THE PERMANENT SECRETARY

Mr. A. H. Angula
P. O. Box 1649
Oshakati
Namibia

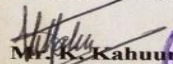
Dear Mr Angula,


RE: Knowledge, Attitude and Practice (KAP) on Malaria Prevention with reference to Indoor Residual Spray (IRS) program amongst the rural communities in Oshana region.

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. Kindly be informed that approval has been granted under the following conditions:
 - 3.1 The data collected is only to be used for your Masters degree;
 - 3.2 A quarterly progress report is to be submitted to the Ministry's Research Unit;
 - 3.3 Preliminary findings are to be submitted to the Ministry before the final report;
 - 3.4 Final report to be submitted upon completion of the study;
 - 3.5 Separate permission to be sought from the Ministry for the publication of the findings.

Wishing you success with your project.


Yours sincerely,


Mr. S. Kahuure
PERMANENT SECRETARY



Forward with Health for all Namibians by the Year 2005!

c) This letter was offered by the office of the Governor for Oshana region to the student as a proof that his application to conduct the study was granted an approval from the local authority to conduct his field data collection in the listed constituencies as requested.


REPUBLIC OF NAMIBIA

OSHANA REGIONAL COUNCIL

Tel: 065-220441	OFFICE OF THE GOVERNOR	P/Bag 5543
Fax: 065-221432		Oshakati, Namibia
Email: chkashuupulwa@oshanarc.com.na / knnitenge@oshanarc.com.na		

Our Ref:.....

Your Ref:.....

Enquiries: *Mr. W.J. Mbangula*

14 July 2008

Hon. Councillor Silverius T.Ekandjo, Ongwediva Constituency
 Hon. Councillor Ismael Uugwanga, Ondangwa Constituency
 Hon. Councillor Henock ya Kasita, MP: Okaku Constituency
 Hon. Councillor Petrus Shigwedha, Uukwiyushona Constituency
 Mr. John P.Kandombo, Chief Regional Officer
 Oshana Regional Council
 Ms Sylvia Kalimbo, Chief Clerk: Okatana Constituency

Dear Sir/Madam

RE: Permission to collect Data for Study purposes

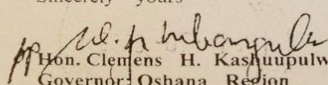
I am pleased to convey to you that Mr. Andreas Hans Angula, a final year student of the Masters of Public Health Degree at the University of Namibia (UNAM) in Windhoek who is employed by the Ministry of Health and Social Services in the Directorate of Special Programmes, Sub-Division: National Vector Borne Diseases Control Programme has been granted permission to collect information which are related to his studies in Oshana Region.

Herewith please find attached copies of his application, testimonial letter from UNAM's Faculty of Medical and Health Sciences and another one from the Permanent Secretary of the Ministry of Health and Social Services.

Kindly render all the necessary assistance and recognition he deserves in your respective constituencies.


I am counting on your cooperation and common understanding.

Sincerely yours


 Hon. Clemens H. Kashuupulwa
 Governor, Oshana Region

All official correspondences should be addressed to the Chief Regional Officer

d) This letter was an official request on behalf of the researcher to get permission from his Directorate authority for temporary attach to Oshakati National Vectorborne Diseases Control Programme (NVDCP) as internal arrangement for him to be closer to his area of field work data collections for his study.



9-00001

REPUBLIC OF NAMIBIA
Ministry of Health and Social Services

INTERNAL MEMORANDUM

DIRECTORATE OF SPECIAL PROGRAMS SUBDIVISION: NVDCP

To: Dr. M. Goraseb *Approve, but vehicle has to come from the local Oshakati based section*
Deputy Director - DSP

From: Dr. P. N. Uusiku *Thank you*
Chief Medical Officer & Programme Manager
NVDCP

Date: 09/07/2008

Re: REQUEST FOR TEMPORARY ATTACHMENT TO NVDCP - OSHAKATI OFFICE.

Dear Dr. Goraseb,

Mr. A.H. Angula is current studying with UNAM doing his Masters in Public Health. He is in his final year busy with the research part. He is requesting to be given a permission to work from our Oshakati office while attending to his research work which is malaria related.


The duration of stay is effect from 14 to 24th July 2008. He also needs a transport when collecting his data in the community of Oshana region respectively.

Please find attached program schedule and study proposal as approved by the Ministry of Health

Thank you for your kind understanding

“Health for All”

e) This letter was a request from the researcher applying for permission from the Regional Director of Oshana through his Director at Directorate of Special Programs to get approval for use the government vehicle for Oshakati National Vector borne Diseases Control Programme (NVDCP). This vehicle will be used during the field data collection work in some constituencies in the Oshana region.



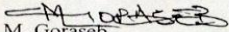
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REPUBLIC OF NAMIBIA
Ministry of Health and Social Services

INTERNAL MEMORANDUM

DIRECTORATE OF SPECIAL PROGRAMS DIVISION: HEALTH SECTOR

To: Dr. N.T. Hamata
Director
Oshana Regional Health Directorate
P/Bag 5538
Oshakati

From: 
Dr. M. Goraseb
Deputy Director-DSP

Date: 14/07/2008

Re: TEMPORARY ATTACHMENT FOR MR. A.H. ANGULA TO NVDCP - OSHAKATI OFFICE.

Dear Dr. Hamata,

Mr. A.H. Angula is doing Masters in Public Health with UNAM. He is in his final year and he is doing the research part. He was given a permission to work from our Oshakati office while attending to his research work which is malaria related.

Based on this background please be informed that approval/arrangement has been made for him to use the local office vehicle GRN 27310 for data collection purposes in the field within Oshana region community respectively.

Attached find his letter for approval to collect the data and the tentative field program

Thank you for your kind understanding

"Health for All"

