FACTORS HINDERING UTILIZATION OF INSECTICIDE TREATED NETS IN HOUSEHOLDS WITH CHILDREN UNDER FIVE YEARS OF AGE IN RWENTUHA TOWN COUNCIL,BUSHENYI DISTRICT

BY

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DECLARATION

I declare that this dissertation is my original work; done to the best of my knowledge and it has never been submitted to this or any other university or institution of learning for academic purposes

SIGNATURE ..... DATE 11/06/2022.

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APPROVAL

This is to certify that this dissertation has been done under our supervision and is now ready for submission

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   Signature..Kanankunda..... Date..11/06/2022.....

DEDICATION

With great honor, I wish to dedicate this research to my wife Mrs. Peace Tumushabe and my children Prince, Praise and Prosper for the moral support rendered to me in my studies. May the grace of the lord be with them forever.

ACKNOWLEDGEMENT

I wish to extend my thanks to my wife Mrs. Peace Tumushabe and my children Prince, Praise and Prosper for the support given to me and courage you have always given to me in my studies. It has been great times with you and thanks for the support in my studies. I cannot say it all, may the Almighty God bless you abundantly.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AIDS	Acquired immune deficiency syndrome
ANCs	Ante-natal Clinics
BSU	Bishop Stuart University
CVI	Content Validity Index
DRC	Democratic Republic of Congo
FGDs	Focus Group Discussions
HIV	Human Immune Virus
IPT	Intermittent Preventive therapy
IRS	In door Residual Spraying
ITNs	Insecticides Treated nets
LC	Local Council
LLINs	Long Lasting Insecticide Nets
MOH	Ministry Of Health
MPH	Master of Public Heath
NGOs	Non-Governmental Organization
OPD	Out-Patient Department
SP	Sulphadoxinepyrimethamine
USAID	United States Agency for International Development
VHTs	Village Heath Teams
WHO	World Health Organization

ABSTRACT

Introduction: Insecticide treated nets (ITNs) arethe powerful toolsused in prevention of malaria and this has attracted Government of Uganda todistribute free ITNs at household level using its village health facilities. Despite the distribution of free ITNs, there have been cases of malaria among children under five years of age. This makes the basis for examining the socio-economic,cultural and marriage institutionalfactors hindering the utilization of the ITNs among such children in Rwentuha Town Council, Bushenyi District.

Methods: The study used a cross-sectional design, employing mix approaches of qualitative and quantitative for data collectionand analysis. Datawerecollected from 320 respondents using administered questionnaires and interview guide for the key informants. Data were analyzed using STATA version 13 to generate both descriptive and inferential statistics using a binary logistic regression analysis.

Results: The study found that education levels significantly hinder utilization of ITNs since its $P<0.05$ ($P = .030$). It was also found that the household size ($P=.008$); the seasons where participants were not using ITNs ($P=.011$) and the lighting system($P=.021$) were also significant factors that could hinder the utilization of ITNs. Cultural values attached to the use of ITNs to prevent malaria was found to be the only statistically significant factor among the cultural factors hindering ITNs use($P=.010$). Marriage institutional factors were not significant.

Conclusion: The study affirms that there are socio-economic, cultural and marriageinstitutional factors hindering utilization of insecticide in Rwentuha Town Council. These factors vary from household to another and hinder utilization differently which has made malaria persistent among the people. The study recommends that plans be made to increase the number of free ITNs distributed to all households, increase in community education and public awareness on ITNs use.

CHAPTER ONE

INTRODUCTION

1.1 Background

Malaria is a life threatening disease that is caused by Plasmodium parasites(Sato, 2021). It is transmitted through the bites of infected female Anopheles mosquitoes and infants who are less than five years (5) years of age are at the high risk of getting infected if not protected(Roberts & Matthews, 2016). Other groups of people who are at high risk include pregnant women, patients with Human Immune deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), non-immune travelers and mobile populations (Kouji Kobiyama and Klaus Ley, 2018).

Globally, about half of the population (3.2 billion people) is at risk of getting malaria(Yir-Erong, Bayor, Ayensu, Gbedema, & Boateng, 2018).Zemba and Paulos (2018) show that an estimated 214 million cases of malaria and 438,000 malaria deaths were enumeratedin 2015. About 91% of these deaths occurred in Africa and from this, more than 70% of all the deaths occurred in children who are less than 5 years old(Papaioannou, Utzinger, & Vounatsou, 2019). The decline in malaria deaths have also been observed among the under five children whereby they reduced from 723,000 in 2000 to 306,000 in 2015 (Strachan et al., 2016). Nevertheless, malaria is still a major cause of death in children and takes the life of a child everytwo minutes (Singlovicet al., 2016).

Use of Insecticide treated nets is among malaria prevention measures used widely in many households (Kateeraet al., 2015). Therefore, ownership of an Insect Treated Net (ITNs) is important in influencing the use of ITNs (Strachan et al., 2016). Due to its central role in malaria

prevention, ownership of ITNs has been emphasized in many African countries. For instance, ownership in Bioko Island in Equatorial Guinea was enhanced in 2007 where 110,000 ITNs were distributed to households. However, a decline of 32 percent was reported in the year 2008/09 in household ownership of ITNs and this was attributed to increase in housing and population in the country (Finlay et al., 2017). In Sierra Leone, over 3 million Insecticide treated nets (ITNs) were distributed to households in an effort to protect individuals from malaria infection. This distribution increased ownership from 37 percent to 87.6 percent (Singh and Rogerson, 2013).

In areas where ownership of ITNs has been enhanced, factors such as area of residence, knowledge on malaria transmission, presence of fever in a child, age, gender and occupational status of the household head and the household size have been identified as significant determinants of use of ITNs. For instance, a study in Ethiopia by Singh and Rogerson (2013) found a unit increase in the size of household increased the odds of ownership of a net more than twice. The study further showed that households which had at least one child below five years, the odds of owning any net was about 60% higher than those with no children below five years (Riley et al., 2016).

Uganda is one the countries with malaria burden in Africa (MOH, 2017). Malaria is one of the most challenging diseases where delayed or complete lack of treatment leads to serious health complications and death (MOH, 2017). The burden of malaria remains unacceptably high, especially among children under five and pregnant women. Malaria accounts for 25-40% of all outpatient visits at healthcare facilities in Uganda (MOH, 2014). Also, up to 20% of all hospital admissions and 15% of inpatient deaths are due to malaria(Lengeler, 2016). To prevent malaria

related complications, household possession and use of ITNs has become a common practice in the country.

According to Strachan et al.(2016), consistent use of ITNs could reduce malaria transmission by up to 99percent and avert as much as 44 percent of all-cause mortality among children under five (Lengeler, 2016). With use of ITNs, an overall reduction in child mortality of 17 percent could be demonstrated, with six lives saved per every 1,000 children protected. There is also evidence that if more than 80 percent of households in an area sleep under an ITN, malaria transmission is significantly reduced, which can benefit people who do not use ITNs themselves (Wanziraetal., 2017).

Dowhaniuk (2021) argued that although the government has put much effort to have 90% coverage in ITNs, household ownership has remained seemingly high compared to utilization especially among under five years children. Malaria continues to be the leading cause of death among under-fives despite the ITNs intervention. One in four households across the country at least one has ITN and 12% own more than one. The proportion of households with a net has doubled from 13 percent in 2000-2001 to 26 percent in 2014-2015 (MOH, 2014). The proportion of under five children sleeping under a mosquito net was at 7.3 percent but has since reduced to 3.2 percent(Wanziraet al*.,* 2017). This is due to unknown socio-economic, cultural and marriage institutional factors. There is still a wide gap between net possession and use in Uganda. Knowing the factors affecting ITNs utilization is essential to achieve the national targets of ITN use and zeroing down child deaths due to malaria (Batwala et al., 2011).

In Bushenyi district and Rwentuha Town Council in particular, the rate of ITNs utilization among under-5 old children is very low, which is against the national target(Ivan, Taremwa et al.,

2017). Though various predictors have been studied in the neighborhood areas, certain socio-demographic, intra household characteristics, cultural and marriage institutional predictors of ITNs utilization to under-5 years old children have not been addressed well in Rwentuha Town Council. Scientific evidence is needed to uncover and support possible associations between these factors and ITNs utilization among under-5 years old children to prevent malaria.

1.2 Statement of the problem

Insecticide treated nets are the most powerful malaria control tools to be utilized and as such they have been an important component of global and national malaria control polices since mid-1990s.Yet up to date utilization is still low, only 13% of African children are currently sleeping under ITN and about 20% are sleeping under any kind of net (Oresanyaet al., 2018).

Malaria continues to be a leading cause of child mortality and morbidity in spite of government, NGOs and private sectors interventions to ensure that children under five who are most vulnerable access, own and sleep under ITN (Finlayet al.,2017). Utilization of ITNs by children under-five requires households' own nets. Whereas programs to ensure children access to ITNs have been vigorous, utilization rates seem not to be a mirror of ownership. This applies toRwentuha town council where the use of Insecticide Treated Nets among children under five years has remained low compared to household ownership (Wanziraet al., 2017).Thisperhapsexplains for the increasing malaria cases among children under five despite available nets at household level. Elsewhere, there is information on factors explaining low use of ITNs compared to household ownership but such factors have not been examined from Rwentuha Town Council(Strachan et al., 2016). A few studies that have been done only analyzed the accessibility, availability and ownership of ITNs by children less than five years of age. This

study was set toexamine factors hindering utilization of ITNs among children under-five years of age in Rwentuha Town Council, Bushenyi District.

1.3 Main Objective

The main objective of the study was to examine factors hindering the utilization of ITNs among the under-fives in Rwentuha Town Council, Bushenyi District.

1.3.1 Specific objectives

1. To assess the socio-economic factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council.
2. To examine the cultural factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council.
3. To assess marriage institutional factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council.

1.4 Study hypotheses

1. **H_0:**There are no significant socio-economic factors hinderingutilization of ITNs among children under-five years.
2. **H_1:** There are significant socio-economic factors hindering utilization of ITNs among children under fiveyears.

1.5 Justification

Uganda is the third largest country with malaria burden in the world after Democratic Republic of Congo (DRC) and Nigeria(Lechthaler et al., 2019). Malaria is one of the most challenging diseases where delayed or complete lack of treatment leads to serious health complications and death. The burden of malaria in Uganda remains unacceptably high, especially among children under five and pregnant women(Ivan Mugisha Taremwa et al., 2020). The diseases accounts for

25-40% of all outpatient visits at healthcare facilities and up to 20% of all hospital admissions and 15% of inpatient deaths are due to malaria(Ssempiira et al., 2018). To prevent its related complications, household possession and use of Insecticide Treated mosquito Nets (ITNs) has become a common practice in the country.

Rwentuha is one of the Town Councils in western Uganda where government has made a considerable effort to distribute ITNs for malaria control. AlthoughITNs distribution has been consistent since 2009,discrepancy still exists between ownership and use of nets(Rek et al., 2020). There is a gap within the household ownership and utilization where by a relatively big number of children rarely sleeps under ITNs. This explains the alarming malaria cases among children under five in the area. A lot of emphasis has been put on ownership but less attention has been given to utilization and factors deterring utilization(Dantas, Singh, & Lample, 2020). There is limited information on the factors deterring ITN utilization given that a few studies have been conducted to assess the factors in the area. The information generated from this study therefore, may assist planners to focus on factors hindering utilization and explore ways of increasing utilization of ITNs among children.

1.6 Scope of the study

1.6.1 Geographical

The study was conducted in Rwentuha Town council, Bushenyi District. The township is one of the councils in Bushenyi located between Kabwohe and Ishaka-Bushenyi municipality. The choice of the study area has been due to increasing cases of malaria infections especially among the children yet households have been accessing ITNs from the government through voluntary access from government healthcare centers at immunization of the childand monthly distribution by the health officers.

1.6.1 Content

The study was limited to factors hindering the utilization of ITNs in Rwentuha Town Council with the specific objectives focusing on the socio-economic, cultural and marriage institutional factors. The use of administered questionnaires and interview guide for the key informants helped to get information from household heads and key informants thereby presenting factors hindering the utilization of ITNs among children under-five.

1.6.2 Time

This study was conducted for a period of 11 months; October 2019 to August 2020. This was a period when different health centers within Rwentuha Town Council have been filled with children and mothers suffering from malaria. This raised the need to assess the extent to which household heads utilize ITNs to protect children from the mosquito bites.

1.7 Significance

The findings of this study willcontribute to the existing body of knowledge concerning the complex nature of malaria prevention among children under five years and specifically the intra-household dynamics that affect the use of ITNs among children under five years. It will also contribute to the understanding of intra-household factors that affect use of ITNs and challenges involved in prevention of malaria among children under five years.

The findings can be used as source of information to non- Governmental Organizations, government and private enterprises interested in promotion of ITNs in the fight against malaria. To the policy makers and those from the ministry of health specifically, the information obtained will provide useful guide for formulatingappropriate policies and programs for ITNs.

The findings willadd on the existing literature for academicians and researchers since the findings may be used as a basis for further research on ITNs in malaria prevention. The gaps

identified maybe explored for further research. Lastly, the study will be essential to the students or researcher since it enables to thefulfillment of the requirements for the award of a Master's Degree of Public Health of Bishop Stuart University.

1.8 Theoretical review

The study was based on Andersen Healthcare Utilization Model. The goal to develop this model was to illustrate a behavioral model that provides measures of access to medical care. The framework was first developed in the 1960s and has since gone through four phases as presented in Figure 1.8.

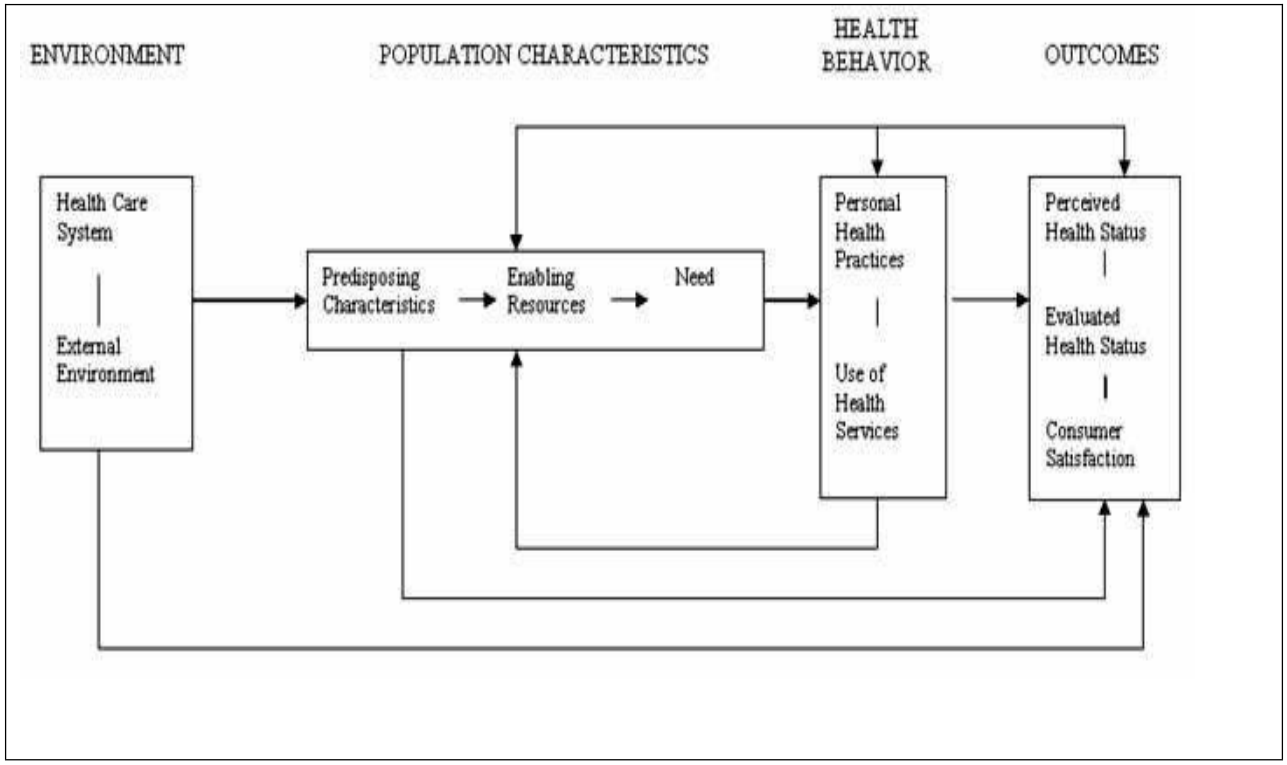

Figure 1.8: Healthcare Utilization Model

Developed in the 1990s, the framework shows predisposing factors which include the socio-cultural characteristics of individuals that exist prior to illness. These accordingto Andersen includes: social structure including: education, occupation, ethnicity, social networks, social

interactions, and culture. Secondly, the health beliefs which include: attitudes, values, and knowledge that people have towards the healthcare system, and lastly, demographic factors including: age and gender.

Enabling factors: These factors are logistical aspects of obtaining care.They include personal/family factors like means and knowing to access health services, income, health insurance, a regular source of care, travel, extent and quality of social relationships. Secondly, community that is available health personnel and facilities, and waiting time. Thirdly, possible additions, including: genetic factors and psychological characteristic.

Need factors: These are the most immediate cause of health service use, from functional and health problems that generate the need for health care services. Perceived need better help to understand care-seeking and adherence to a medical regimen, while evaluated need can be more closely related to the kind and amount of treatment that provide after a patient has presented to a medical care provider (Ucakacon et al., 2011). This is divided into two; as “perceived” that is how people view their own general health and functional state, as well as how they experience symptoms of illness, pain and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help. Secondly, it is “evaluated” which represents professional judgment about people's health status and their need for medical care.

1.9 Conceptual frame work

The study looked at ITNs use as the dependent variable and various factors hindering the utilization of ITNs as the independent variable (see Fig 19).

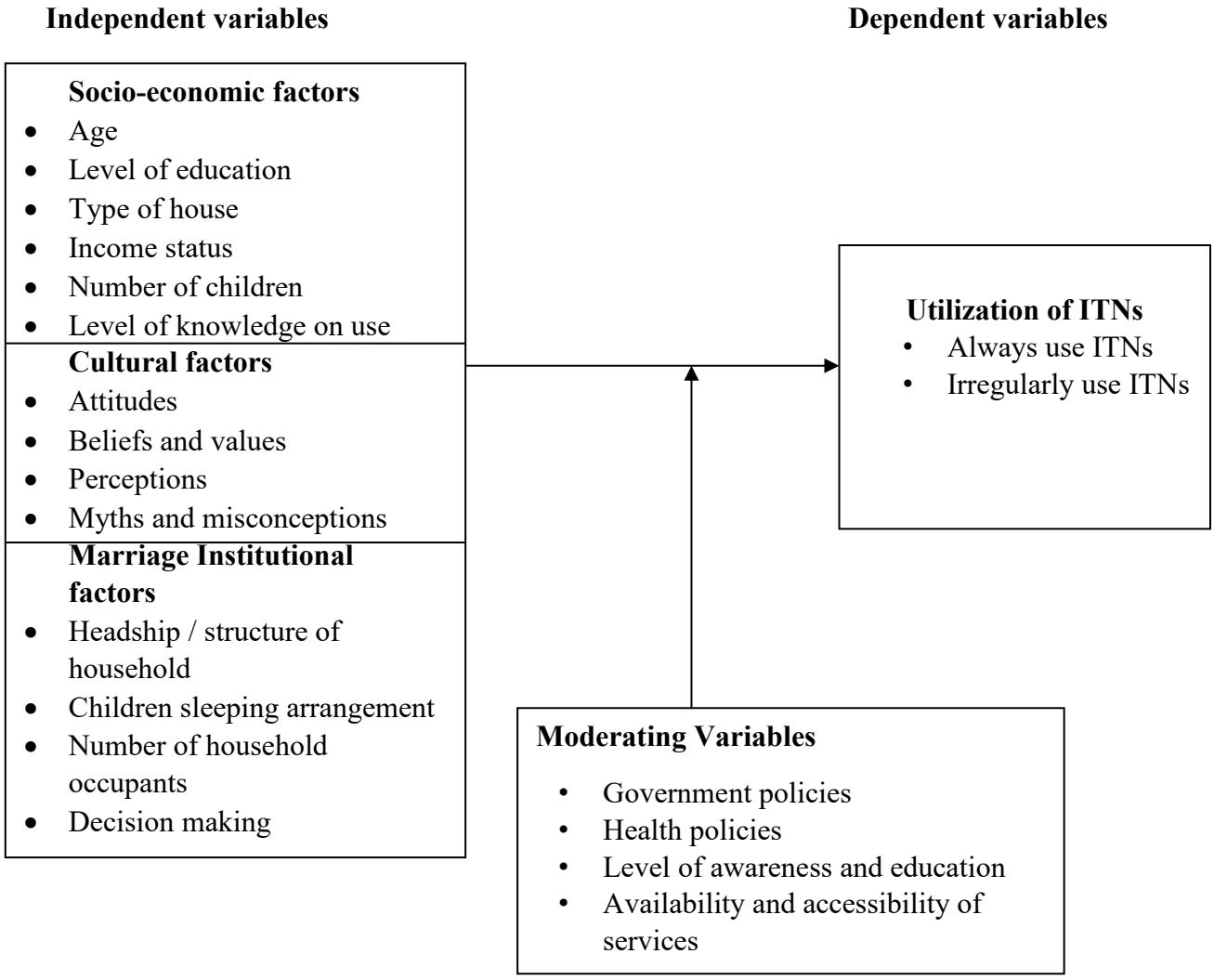

Figure 1.9: A conceptual framework for factors hindering utilization of ITNs

The illustration infigure 1.9 shows the relationship between dependent and independent variables. It shows that there are socio-economic, cultural and marriage institutional factors that hinder utilization of ITNs. Under the socio – economic factors, the conceptual framework shows that utilization is hindered by age, sex, education level, occupation, income of the household and marital status and number of household occupants. The cultural factors include beliefs and values,

attitudes, perceptions, myths and misconceptions while marriage institutional factors include headship/structure of household that is essential in determining care upon the children, children sleeping arrangement, number of household, occupants or children in the house, sex of the children and who makes decision to sleep in the net within the household arrangement. The fact that all participants were owners of the ITNs and whose all children have ever suffered from malaria, dependent variables is intersected into two (always use ITNs & irregularly use ITNs). Always use are those who sleep under ITNs per night and irregularly use, is used to refer to individuals using ITNs while missing some nights.

1.10 Definitions of Key Terms

Hindering: This study uses this term to refer to making it slow or difficult to the progress towards the needed results (Jogezai, Baloch, & Ismail, 2020). This term is therefore used to refer low progress in utilizing the ITNs by the caretakers or household heads upon children under the age 5.

Utilization: The study uses this term as making practical and effective use of something that has been availed towards its essential purpose. Giang and Tuan (2018) state that utilization is an actual practice that proceeds access of something. Utilization is normally regarded in various ways like low – utilization, high rate of utilization or moderate utilization. For the purposes of this study, the term is either regular or irregular utilization. Regular utilization of ITNs is used to mean constant or daily sleeping under the ITNs by the children as they are being helped by their parents / heads of the household.

Insecticide Treated Nets (ITNs): This study uses the term insect – treated bed nets as a form of personal protectionthat has been found to reduce malaria illness, severe disease, and death due to

malaria in the endemic regions(Anikwe et al., 2020). In various communities with worldwide trials of Africa, ITNs have been shown reducing the death of children under the age 5 from all causes by about 20% (Scates et al., 2020). Normally, the application of the bed nets is purposely to protective barrier around an individual sleeping under them and the bed nets which are treated with an insecticide are much more protective than the untreated nets. The insecticide used in this case kill mosquitoes as well as other insects. Njumkeng et al. (2019) show that used insecticides on the nets also repel mosquitoes and reduce them from entering the house and attempt to feed on people inside the house.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter explored literature on factors hindering the utilization of ITNs among the under-five children. It specifically examined the key concepts and reviewed secondary information on the socio-economic, cultural, and marriage institutional factors hindering utilization of ITNs. It is important to remark that Malaria remains a major infectious disease in most developing countries and especially Uganda with third largest malaria burden in Africa and malaria accounts for high morbidity and mortality among pregnant women and children under five. The disease impacts on the health and economy negatively and affects its productivity, adds to costs of care and impacts negatively on the household income. Using ITNs is therefore essential starting from the grassroots level to national level.

2.1 History of Insecticide Treated Nets

In Africa region, the use of ITN was scaled up in two steps. In 2005-2008, ITN distribution focused on the most vulnerable populations which were women who were pregnant and children under five years of age. This was done in order to reduce mortality in this group (Strachan et al., 2016). The ITNs were distributed during the antenatal clinics and during routine immunization for children under the age of five years. In 2009, ITNs ownership and use was scaled up through the strategy of universal access and nationwide distribution of ITNs was adopted to cover all the populations at risk of getting malaria infection. In 2012, a policy on universal coverage with ITNs was adopted by all the countries which were at the risk of malaria infections. This was defined by one ITNs for two people at the risk of malaria infection. As a result, this led to free

ITNs distribution in 39 out of 44 malaria endemic countries through the antenatal clinics and immunization clinics for children under the age of five years (Wanziraet al., 2017).

2.1.1 The Use of ITN

Insecticide treated nets (ITNs) and indoor residual spraying (IRS) have been found to be the most effective methods in prevention of malaria especially in Sub Saharan Africa. This became true when the IRS were made main strategy for Global Malaria Eradication Campaign that led to elimination of malaria in many countries and reduced malaria burden in others. The use of ITNs led to a decrease in a number of malaria deaths by 49% from 2000 to 2012. It also reduced the new malaria cases by 31% during the same period of time (Gimniget al., 2016). On the other hand, due to scale up of ITNs and IRS in Africa, malaria illness has reduced and its specific mortality to 42% by 2013.

The use of insecticide treated nets reduces malaria transmission in the general population and has been found to be effective in pregnant women and children under the age of 5. In Kenya, one of the main malaria prevention strategies include distribution of Long-Lasting Insecticide Treated Nets (LLINs) through antenatal clinics and child welfare clinics. In addition, pregnant women are given Intermittent Preventive Therapy (IPT) using Sulphadoxine –Pyrimethamine (SP) which is part of the antenatal services (Batwalaet al., 2011).

2.2 Socio-economic factors hindering the utilization of ITNs among children under-five

There are several hindering the utilization of ITN at community and household level that have been identified by various researchers (Ucakaconet al., 2011). They include: age, residence, education level and ethnicity, size of the household, number of children less than five years in the household, access to information, sex of the household head, wealth and occupation among others. The determinants of utilizing theITN vary due to various reasons and complex factors are

interlinked and related to each other. There is no way of identifying just one or two factors that only affect utilization of insecticide treated nets (Bennett et al., 2012).

A study by Mazigoet al. (2010) summarized some of the above-mentioned factors as follows. From his study on determinants on use ofbed nets in Gambia, gender was found to have an influence on demand for bed nets. Women were found to be more aware of diseases and their prevention. For example when a woman becomes pregnant she is at high risk for malaria and thus has to visit the hospital where she receives education about the disease and how to prevent it. Women are also caregivers at home when a family member suffers from malaria and they have to take care of them.

Graves et al. (2011) found that some reasons given for not using ITNs include discomfort, heat or inconvenience, limited perceived benefit or preference to use other malaria preventive methods. This is supported by a study conducted by Wanziraet al.(2017) where more than one-quarter of women who slept under ITNs experience at least one form of discomfort with excessive heat being the major discomfort. This might be attributable to the typical hot weather of Africa and lack of electricity.

The level of education of parents/caregivers was found to have variable effects on the utilization of ITNs among under-five children in several studies (Ucakacon, et al., 2011). Some studies found a good correlation between the possession of higher education and increased use of ITNs. Singh and Rogerson (2013) found that although possession of a higher education increases the likelihood of possessing ITN, it was not found to increase utilization.

Shape of the net owned had great influence on use. People in rural areas who owned conical nets were more likely to use them than those who owned rectangular nets. People who owned rectangular nets reported that rectangular nets were harder to hang in houses found in rural areas.

Most houses found in rural areas are round shaped, making it difficult to hang a rectangular net. Conical nets were said to be convenient in that they can be easily moved from one sleeping space to another (Singlovicet al., 2016).

The study by Batwalaet al. (2011) showed that the number of young children in a household determine the use of mosquito bed net. Families with children less than five years of age were more likely to use bed nets than those with children over five years. This was because the parents were more likely to participate in malaria prevention activities than those with older or fewer children. This inferred that the less the number of children in a household, the more was the likelihood of them sleeping under ITN.

In a study by Tassewet al. (2017) on determinants of using ITNs among under five children, marital status was found to be positively associated with the use of ITNs. Married care givers of under five children are more likely to put their under five children under ITN compared to non-married caregivers. This was because of their better exposure and experience with child health.

Garcia Garcia-Basteiroet al. (2011) found a positive association between the use of ITN and the age of the child. The older the child, the lesslikelihood of him/her sleeping under an ITN. This was related to less availability of insecticide treated nets whereby priority was given to younger children compared to the older ones. Another explanation was that as the children grew older, the caregivers assumed they were less likely to suffer from malaria due to improved immunity against the disease thus this led to less utilization of the treated nets.

Hetzelet al.(2012) found a positive association between the area of residence and use of ITNs among pregnant women in Nigeria. The urban area registered a high use of ITNs among pregnant women compared to rural areas despite the fact that the rural areas had higher levels of

ownership of ITNs. This study showed that increased ownership of ITNs did not translate to increase in ITN utilization.

Garcia-Basteiroet al. (2011) in their study to assess the determinants of ITN utilization among under five children in Nigeria found that rural children were more likely to sleep under ITN, the night before the survey compared to urban children. They also found that educated caregivers who had high levels of wealth index reported increased utilization of ITN among under five children. The study found a positive association between religion and ITN utilization. Christians reported high utilization of ITNs as they were more than three times likely to put their under-five child under ITN compared to Muslims.

On the contrary Humphrey and Mazigo (2010) found a positive relationship between income and use of ITNs in Nigeria under five children from families that were economically stable were more likely to sleep under ITNs than children from poor households. These findings are supported by Tassew and Deressa (2017) who also found a relationship between use of ITNs and income in Ethiopia.

Studies on education and awareness creation have identified a correlation between the level of knowledge about malaria and utilization of ITNs among under-five children across varied socio-demographic groups (Wanziraet al., 2017). Parents who generally receive health education including information on malaria prevention and control during antenatal care visits to health facilities are likely to make their children sleep under ITNs as compared to those who do not access education (Amako, 2016).

2.3 Cultural factors hindering the utilization of ITNs among children under-five

Culture is the process through which groups of people believe, behave and live in their daily lives. It is expressed through dancing styles, singing and music; foods, communication, worship and beliefs in God, movement, thinking, wearing and sleeping. Therefore, the misconceptions about malaria and its prevention have been some of the important determinants of using the ITN among pregnant women (Singlovicet al*.,* 2016). Women who had misconceptions about causes and prevention of malaria were less likely to use ITN even though they may have one (Kateera at el2015). Such women believe that nets have certain chemicals that can easily make their children sick.

Some of the misconceptions that have been identified to reduce the ownership and utilization of ITN include; perceiving malaria as ordinary fever caused by over-work, sunlight, excessive sex, noise, witchcraft, not resting/sleeping enough, drinking too much alcohol/beer, eating too much palm/groundnut oil, physical contact with a malaria patient, exposure to cold air or drinking contaminated water (Namusokeet al., 2010). Identifying such misconceptions for the purpose of designing appropriate educational interventions could significantly lead to improvement in health-seeking behavior and preventive practices (Strachan et al., 2016). However, this study is limited by the fact that it did not measure the degree of exposure to the social intervention necessary to have a significant influence on ITN use (Finlay et al., 2017). Due to the strong correlation between misconceptions and ITN use, there is the need for correcting these misconceptions about malaria and its prevention through health education (Singh and Rogerson, 2013).

A study by Senaet al. (2013) found ethnicity affecting the attitude of a person towards programs for prevention of malaria. Ethnicity was closely linked to the location of residence whereby some

tribes were known to live in the rural areas and they were poor. This affected the amount of income generated and also the ability to afford the bed nets or other malaria prevention products and consequently utilization of ITN.

In a study carried out in Mukono District, Batwalaet al. (2011) discovered that cultural beliefs affect the use of ITNs among children under five. Respondents believed that chemicals used to treat the nets were very harmful to adults, children and pregnant women. They believed that all nets are treated with a chemical which affect pregnant women, especially their breathing and that if the chemicals can kill mosquitoes instantly, they can also kill people.

In the same study, another constraint to ITNs access was the cost and uncaring husbands. Over three quarters of women in this study complained that men did not care about the health of their wives and their children (Batwalaet al., 2011). Men were reported not to prioritize the issue of health. Women thought that men use their money on items like alcohol and forget about buying nutritious foods and providing health care to their families. Women participants at Kimenyedde sub-county said that they fear to buy mosquito nets because their husband would question them about the source of the money. This is because women in this community are not expected to have money, or if they have money, the husbands feel obliged to know its source. More than half of the women participants in all the FGDs expressed fear that if a woman bought a net, the husbands would suspect that she got the money from another man (Ucakaconet al*.,* 2011).

Other key factors which explain the use of ITNs for malaria prevention relate to perceptions, attitude and retention level of ITNs. Documented evidence shows that knowledge and misconception on causes and prevention of malaria, awareness on malaria prevention and retention period of ITNs have a significant effect on use of ITNs (WHO, 2012).

OkaforandOdeyemi (2012) while investigating the relationship between care-givers misconceptions and non-use of ITNs by under-five Nigerian children using a logistic regressionmodel and Amoranet al., (2012), in a study seeking to understand the cause of low long-lasting insecticide nets (LLINs) use among household members for protection against mosquito bite in kersa, Eastern Ethiopia reported a positive relationship between those with knowledge on causes of malaria and use of ITNs. In addition, use of ITNs was found to be low among people with little knowledge on malaria prevention methods.

In a study carried out in Mbarara on the perceptions about Malaria prevention (Wanziraet al., 2017), avoiding mosquitoes was the most common method mentioned for prevention of malaria and not ITNs. So the chances of people applying this method were high compared to ITNs. Other preventive strategies mentioned include boiling of drinking water, improved sanitation, clearing of bushes around the compound, avoiding cold weather, good nutrition, burning mosquito coils, screening of buildings, taking anti-malarials regularly and closing windows early. While most people in this study said ITNs were efficacious both in preventing mosquito bites and malaria, they expressed ignorance of insecticide treated nets and could not tell whether a bed net was treated or not. There were some doubts about the bed net efficacy in preventing malaria. Participants mentioned that some households sleep under mosquito nets but their children die of malaria. Whether mosquito nets work or not remains a myth in the minds of some people.

2.4 Marriage institutional factors hindering the utilization of ITNs among children under five.

The marriage institutional factors are various factors which forms the intercourse between married people and their children or dependents. These are factors that govern the daily relationship among the household members as directed by heads. Therefore, the net ownership is

important to assess the use of ITNs at the household level. It is important to note that utilization is the crucial indicator that generates desired epidemiological impact. However, there are few studies which have examined the relationship or intra-relationship and the difference between the two indicators. A meta-analysis of household surveys on net utilization and ownership found a wide gap between net possession and use(Mohamed, Mohamed, & Hassan, 2020). In fact, ITN ownership was found to be between 0.1 percent and 28.5 percent, while use among children less than five years of age ranged between 0 percent and 16 percent (Korenromp 2003). This is still unacceptably very low to have an impact on reduction of malaria episodes among the under-fives.

Appiah-Darkwah and Badu-Nyarko (2011) found that children under five years of age who shared beds with their parents had higher levels of ITN utilization compared to those sleeping alone. In some circumstances where the sharing space was small, some of the children slept on the floor and thus they did not sleep under ITN.

Equality and decision making are major issue in ITN ownership. Net ownership has been found to be lowest among the poorest households where decision making remain a main concern to males; thus, possibly linking possession to the cost of the net and utilization. In a study conducted on the effect of lowering tariffs on nets and netting materials predict that reducing tariffs on insecticides and ITNs from 42 percent to 0 percent and the tariff on netting materials from 40 percent to 5 percent would increase demand for ITNs by 9–27 percent and give wives a chance to utilize nets (Simon 2002). Wisemanreported a significant association between decision making, good access roads together with credits to the community and net ownership (Wiseman 2007). Perceived risk of malaria and benefits of the nets by the population also drive demand.

Onwujekweet al, in a Nigerian study, found that households with a recent attack of malaria and those with higher willingness to pay were more likely to purchase a net than their counterparts

(Onwejekwe et al 2003). Such communities have a perceived need for utilizing ITNs. Bed net acceptability trials in the Solomon Islands began with a qualitative study in 2009 to elicit decision preferences; respondents preferred darker (green) nets and wider nets to accommodate sleeping mats made of coconut leaves (Atkinson et al., 2010). The ensuing crossover acceptability trial compared Olyset, PermaNet and DuraNet in a threestage crossover design, with participants using each net for 10 days. Olyset were deemed less acceptable by women due to wrinkling and shrinking after washing; larger nets and darker colours were preferred, and shape preference was split equally between conical and rectangular. A similar study in Vanuatu household heads noted preferences for larger mesh and wider nets (Lover et al., 2011), while a qualitative study in Timor-Leste households shows that despite aiming to elucidate preferences, found that distinctions between attributes were muddied due to differentbrands having the same colour, and because participants did not have enough experience with nets to makepreferences revealing.

In East Africa, a 2009 study explored preferences among 400 households in Central Kenya; 63% preferredrectangular nets, although this varied among the four villagesin the sample (Banek et al., 2010). Green nets were the most preferred(51%) versus blue (21%), once again due to green's dirtconcealingabilities. In the population, 96% of those withaccess to a net used one. In Liberia, an acceptabilitytrial of Interceptor nets noted that perceived insecticidalactivity was an important factor for acceptability and useand that despite half the respondents preferring blue, white ITNs were still used.

A 2014 study in Amhara, Ethiopia found that shapepreference was more or less evenly split, with ease ofuse the main reason for preferring conical nets, and betterfit with the bed the main reason

for preferring rectangular nets (Aleme, Girma, Fentahun, 2014). Blue colour and medium size were themostpreferred. However, in southwestern Ethiopia, conical nets were perceived to fit beds and houses better (Birhanu et al., 2015).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents an overview of the study design and methodology. It presented how the study was conceptualized, designed and executed. It showed the research design, area of study, study population, sample size, sampling technique, data collection methods and instruments, research procedure, data processing and analysis methods that were used. It also gave the ethical standards and problems that were encountered during the data collection exercise.

3.1 Research Design

The study was cross-sectional employing both qualitative and quantitative approaches to collect data from heads of households. Quantitative methods involved the use of questionnaire to capture quantifiable responses on the socio-economic, cultural and marriage institutionalfactors hindering the utilization of ITNs among under-five children at household level whereas qualitative methodwas used to investigate perceptions, attitudes, beliefs and knowledge on ITNs use using interviews. Key informant interviews were used to obtain views and experiences of service providers and community leaders.

3.2 Study Area

The study was conducted in Rwentuha Town council, Bushenyi District.BushenyiDistrict bordersRubirizi District to the northwest, Buhweju District to the northeast, Sheema District to the east, Mitooma District to the south and Rukungiri District to the west. The coordinates of the district are: 00 32S, 30 11E. Rwentuha Town council is estimated to have a population 27856 (population census, 2014). The town council continues to record a growing number of malaria

cases among under five children yet free ITNs have been distributed amongst households as strategy to fight the disease in the area.

Majority of the population of the town council are peasants who depend on subsistence agriculture for food and income. The town council is inhabited mainly by Banyankole and Bakiga, and other tribes include; Batooro, Banyarwanda and Bakoonjo.

3.3 Population of study

The study population comprised of parents/care-takers of under-fivechildren who are owners of bed-nets and key informants like the health workers, VHTs and town council health inspector. In this case, parents/caretakers who received the net and whose children have suffered from Malaria were only considered. The key informants were considered because they were responsible for distribution of ITNs and assessment of government programs at the grassroots level and households.

3.4 Sample Selection and Size

Study sample size was calculated using the standard statistical formula (Kish and Leslie, 1965) at 95% confidence interval and 5% error term. A sample of 320 net-owners / respondentswhose children have ever suffered from malaria has been calculated as follows;

$n = Z_{\alpha/2}Pq/d^2$

$n = 1.96^2 \times .297 \times 0.703/0.05^2$

$= 3.8416 \times 0.297 \times 0.703/0.0025$

$= 0.8020/0.0025$

$n = 320$

Whereby, n = sample size; d = Degree of accuracy 0.05; p = Estimated number of households whose children under the age of five have suffered from malaria 29.7% (0.297); q = Households without nets 70.3% (0.703); $\alpha = 0.05$(level of significance)

3.5 Sampling strategy

Purposive and random sampling techniques were used for the case of this study. Purposively, the researcher selected Rwentuha Town council or Sub-County as one of the areas where there has been free net distribution to parents of under-five years by MOH on yearly basis since 2009. Random sampling technique was used to select Rwentuha Parish where this study was carried out. The area was selected after establishing that despite efforts by the government to supply nets, children still suffer from malaria (DHO Report, 2017). The exercise of net distribution has been ongoing to any female who gives birth from government health facility. Therefore,anyhousehold within Rwentuha Town council whose female household-head has given birth from designated government health facility had a net for the children. The study also established that some mothers with evidence for having given birth from private health clinic, receive free ITNs from government health facility.

In order to select respondents, random sampling technique was used on320 households. The respondents were mothers who received ITNs yet their children suffered from malaria. Random sampling technique was used with the view that it gives participants equal opportunities to involve in the study. This saves the study from future bias about procedures to sample selection. Through this group, quantitative data were received.

The study also employed purposive sampling to select the key informants who were the source of the qualitative data. This sampling technique was used since it directs an investigator to knowledgeable participants. Therefore, a total of 12 key informants; five (5) health workers,

six(6) VHTs and one (1) town council health inspector, gave various narratives about utilization of ITNs.

3.5.1Inclusion Criterion

Households with mothers who accessed ITNs and whose children have had malaria. .

3.5.2 Exclusion criterion

Households whose mothers have never accessed ITNs and whose children have ever suffered from malaria.

Households whose mothers have never accessed ITNs and whose children have never suffered from malaria.

3.6 Data collection methods and instruments

The study used two methods for collecting data; administered questionnaires and interviewing (interview guide). Interview guide was used on the key informants to get qualitative data and administered questionnaires were used on the care-takers or parents of children.

3.6.1 Questionnaire survey

Aquestionnairewas the main method for collecting quantifiable data from parents /caretakers of children under-five. An administered questionnaire with both closed and open-ended questions was designed and thenused to collect data from respondents. This method allowed a selected number of respondents to answer specific questions. The questions phrased in the questionnaire were in line with the study objectives, capturing information on;

- Socio demographic characteristics of heads of household like sex, age, education level, occupation, source of household income, number of under-five children, employment status, size of the house and access to ITNs.

- Socio-economic factors hindering utilization of ITNs among children under-five
- Cultural factors hindering the utilization of ITNs among children under-five
- Marriage institutional factors hindering the utilization of ITNs among children under-five

3.6.2 Interview guide

Interviews were conducted using an interview schedule that was administered to key informants. This involved oral questioning where the researcher became the interviewer and the respondents were interviewees. The interview schedule constituted open ended questions. Interviews were preferred because majority of the key informants were busy with their work schedules.

3.7 Quality Control Methods

3.7.1 Validity of Instruments

Before administering the questionnaires, they were first examined by research assistants who were doing research. They were then scrutinized by the supervisor. This ensured that the terms used in the questionnaire were precisely defined and properly understood. The instruments were then pilot tested on an appropriate population of 2 parents/caretakers of under-five children outside the target population. Content Validity Index (CVI) was computed to establish validity of the instruments using the following formula;

$$C.V.I = \frac{\text{Number of items declared valid}}{\text{Total number of items}}$$

	Parent 1	Parent 2
Valid questions	15	14
Non-valid questions	1	2
Total questions	16	16

Therefore, CVI = 15 + 14/16 +16 x 100 = 90.6%. The CVI was determined as 90.6% and this implied that the instruments were valid in relation to the study variable. Questions that were rated invalid were deleted to increase validity.

3.7.2 Reliability of Instruments

An instrument is reliable if it measures consistently what it is supposed to measure. Even if it is administered by other researchers, it should produce the same results. In this study, the pretest method was used to establish the instruments' reliability.

3.8 Ethical considerations and Procedure

The proposalwas approved by Bishop Stuart University Graduate School. Ethical approval was obtained from TASO Ethics review committee. Thereafter, a research permit was obtained from the graduate coordinator prior to the study. Administrative authorization to carry out the study was sought from the Town clerk Rwentuha Town council who introduced the researcher to the Community. With the assistance of LCI Personnel, appointments were made with the selected respondents. An informed consent of each individual participant was obtained at the start of the study. Respondents read andgot informed about the consent towards their participation in the study. Among other ethical considerations were confidentiality and anonymity which were maintained. For example, the researcher only used different numbers and letters to refer to names of the participants rather than writing their names.

Before data collection started, participants were informed about voluntary participation. They were expecting nothing like money for the information given. Besides, they were informed about their rights to withdraw from the study at any time of their will. The researcher or the

principleinvestigator and assistants took the duty to respect culture of the respondents during the data collection process.

3.9 Data Analyses

3.9.1 Qualitative Data Analysis

Data from interviews was analyzed through content analysis.

3.9.2 Quantitative Data Analysis

Data collected through questionnaire was checked for uniformity, accuracy, consistency, legibility and comprehensibility. It was then entered using the excel computer program and later imported to STATA version 13.0 for analysis. Data analysis was performed at three levels (that is Univariate, bivariate and multivariate) in which descriptive (percentages, means, standard deviations and t-statistics) and inferential (logistic analysis) statistical outputs were generated. Data analysis was done per objective as discussed below;

Objective one

Objective one was to assess the socio-economic factors hindering the utilization of ITNs among children under-five. This objective was analyzed using a binary logistic regression model. This type of model was used because the dependent variable was dichotomous (1 for those affected by the factors and 0 for those not affected). The binary logistic model was specified as;

$$\log\left(\frac{\mathrm{p}}{1-\mathrm{p}}\right) = a + \mathrm{b}_1 x_1 + \mathrm{b}_2 x_2 + \mathrm{b}_3 x_3 + \ldots\ldots\ldots\ldots\ldots\ldots + \mathrm{b}_n x_n + e \ldots\ldots . 3.2$$

Where; p = is the probability of success

α = is the coefficient on the constant term

b_i = is the coefficient(s) on the independent variable(s)

x_i =is the independent variable(s)

e = is the error term

Objective two

Objective two sought to examine the cultural factors hindering the utilization of ITNs among children under-five. This objective was also analyzed using a binarylogistic regression model. Since the dependent variable was dichotomous (1 for those affected by the factors and 0 for those not affected). The binarylogistic model was fit for analyzing and it was stated as;

$$\log\left(\frac{\mathrm{p}}{1-\mathrm{p}}\right) = a + \mathrm{b}_1 x_1 + \mathrm{b}_2 x_2 + \mathrm{b}_3 x_3 + \ldots\ldots\ldots\ldots\ldots\ldots + \mathrm{b}_n x_n + e \ldots\ldots . 3.2$$

Objective three

Objective three sought to assess marriageinstitutional factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council. This kind of objective was analyzed using a binarylogistic regression model as expressed below;

$$\log\left(\frac{\mathrm{p}}{1-\mathrm{p}}\right) = a + \mathrm{b}_1 x_1 + \mathrm{b}_2 x_2 + \mathrm{b}_3 x_3 + \ldots\ldots\ldots\ldots\ldots\ldots + \mathrm{b}_n x_n + e \ldots\ldots . 3.2$$

3.10 Limitations of the Study

Interviews and the questionnaire captured self-reported information and relied primarily on respondents providing the right information. Misreporting by respondents could not be ruled out. The delimitations of the study were the small geographical area. A single town may possibly not be representative of all communities in the district. Therefore, the sample of 320 respondents and 12 key informants could not represent the views of all communities in Bushenyi in particular and Uganda at large.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter has presentation and analysis of the findings. The findings were presented in form of socio-demographic characteristics, socio-economic, cultural and marriage institutional factors hindering utilization of ITNs among children under-five in Rwentuha Town Council. The information was received from 300 participants and 12 key informants as presented in Table 4.1 of response rate.

Table 4.1: Response rate

Categories	Frequency	Percent
Number of questionnaires delivered	320	100
Number of responses	300	94
Number not conducted	20	6
Number of key informants interviewed	12	100

Table 4.1 shows that out of 320 participants that were proposed, 94% (300) were interviewed. This came as a result of saturation point which was reached before completion of the whole number. The study also interviewed 12 key informants as presented in the table.

4.2 Demographic characteristics

The key demographic characteristics examined in this study included; gender, marital status, age, and level of education. It is important to note that the demographics were for parents who accessed ITNs from the government health facilities in Rwentuha Town council and whose

children before the age of five (5) have ever suffered from malaria. Therefore, use of ITNs verses demographics is presented in Table 4.2.

Table 4.2: Utilization of ITNs by demographics in percentages

Variables	Categories (Fr = 300)	Always used ITNs (%)	Irregularly used ITNs (%)	Total
Sex	Males	32.0	16.3	48.3
	Females	41.0	10.7	51.7
Marital status	Married	63.0	23.0	86.0
	Never married	10.0	4.0	14.0
Age bracket	18 – 29	29.0	14.7	43.7
	30 – 40	35.4	11.3	46.7
	41 and above	8.6	1.0	9.6
Levels of education	None	5.4	5.3	10.7
	Primary level	12.0	6.7	18.7
	Secondary	20.3	5.7	26.0
	Diploma	25.0	6.6	31.6
	Degree	10.3	2.7	13.0

The demographics presented in Table 4.2 show that out of 300 participants, 48.3% were males and 51.7% females. The findings reveled that out of 48.3% of total males, 32.0%could always useITNs upon their children below age of five and 16.3% used the ITNs irregularly. It is also indicated that 41.0% of females always used ITNs and 10.7% irregularly used ITNs.

The study also interrogated about marital status and found that out of 86.0% of the married people, 63.0% always used ITNs upon their children below age of 5, as compared 23.0% married but use ITNs irregularly. Out of 14% of those who have never married, 10.0% always used ITNs as opposed to 4.0% that used ITNs irregularly. Within the age brackets, the use of ITNs was higher between participants between the age of 30 – 40. It is indicated that 35.4% always used ITNs as compared to 11.3% who irregularly used the same. Among participants within age bracket 18 – 29, the findings indicated that 29.0 could always use ITNs and 14.7% could

irregularly use the same. Above the age of 41, the findings indicated that 8.6 would always use ITNs and 1.0% irregularly use the ITNs.

Education levels were also examined and found that 25.0% with diploma; 20.3% from secondary level; 12.0% from primary; 10.3% at degree level and 5.4% without any level would always use ITNs for their children below 5 years. Despite participants who declared having been using ITNs irregularly, there were various reasons and specific areas where the children from parents who always used ITNs could have received bites by mosquitoes. According to the key informants, it was remarked that "Even within the households where parents always use ITNs, there are various laxity on their side. Some children sleep in their own rooms with less or without care at night, some sleep at 8:00 pm in the sitting rooms or any places as they wait for supper to be served at 10:00 pm and beyond. Such circumstances become easy grounds for the mosquitoes to bite the children and thereby contracting malaria".

The researcher conducted an analysis to establish whether demographics scientifically hinder utilization of ITNs and the findings are presented in Table 4.3 and Table 4.4.

Table 4.3: Analysis for demographic parameters

Use of ITNs to a child		B	Std. Error	Wald	df	Sig.
Yes	Intercept	.465	.502	.856	1	.355
	Sex	.052	.551	.009	1	.925
	Marital status	-.786	.439	3.208	1	.073
	Age bracket	-.008	.429	.000	1	.985
	Level of education	.446	.210	4.514	1	.034

Table 4.4: The Likelihood Ratio Tests for Demographic parameters

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	44.920	.849	1	.357
Sex	44.080	.009	1	.925
Marital status	47.184	3.113	1	.078
Age bracket	44.071	.000	1	.985
Level of education	48.638	4.567	1	.033

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

From Table 4.3 and Table 4.4, analysis shows that education levels significantly hinder utilization of ITNs since $P<.05$ *(*P = .034&.033). The null hypothesis that education levels do not significantly hinder utilization of ITNs to children under the age 5 is rejected in favour of alternative. Secondly, a binary logistic regression modelwas used because the dependent variable to this study was dichotomous with participants who always used ITNs and irregularly used the same (1 for those affected by the factors and 0 for those not affected). This is illustrated by Table 4.4 with 0 effect.

4.3 Socio-economic factors hindering utilization of ITNs to Children below age of -five

The first objective to this study was to assess socio-economic factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council. The factors were identified within context where participants live and through their daily practices, it was hypothesized that these factors would affect utilization of ITNs upon children aged below 5. Responses from the contextual factors were therefore tabulated with utilization of ITNs as presented in Table 4.5.

Table 4.5: Illustrating socio-economic factors and utilization of ITNs

Variable	Category (Fr = 300)	Always used ITNs (%)	Irregularly used ITNs (%)	Total
Religion	Muslim	16.3	7.4	23.7
	Christianity	56.7	19.6	76.3
Occupation	Formal employment	10.0	3.3	13.3
	Farmer	57.3	10.7	78.0
	Business	5.7	3.0	8.7
Household size	Small (1 - 4 persons)	55.0	17.3	72.3
	Large (5 and above)	18.0	9.7	27.7
Ownership of ITN	Woman	14.0	6.3	20.3
	Man	59.0	20.7	79.7
Income status	Low (bellow 100,000 a month)	34.3	12.0	46.3
	High (Above 100,000 a month)	38.7	15.0	53.7
Numbersless than age of 5	Less than 3	49.3	16.7	66,0
	More than 3	23.7	10.3	34.0
Gender of a child	A boy	42.7	18.0	60.7
	A girl	30.3	9.0	39.3
Seasons of the year	Hot season	19.0	8.7	27.7
	Rainy season	11.0	8.7	17.7
	None of the two	45.0	9.6	54.6
Type of House	Round house	3.3	3.0	6.3
	Not rounded	69.7	24.0	93.7
Lighting system	Local candles	7.7	6.3	14.0
	Electricity / solar	65.3	29.7	86.0

Table 4.5 shows that there were more Christians (76.3%) who were interviewed as compared to Muslims (23.7%). It also shows that a large number of 56.7% of Christians could always use ITNs on their children and 16.3% of the Muslims did the same. A few numbers of the respondent Christians (19.6%) and Muslims (7.4%) could irregularly use ITNs on their children aged .5. The study was entirely conducted among participants with formal employment, farmers and business personnel. It shows that 57.3% farmers; 10.0% in formal employments and 5.7% business personnel could always use ITNs to children under the age of 5. Only 10.7% of the farmers;

3.3% from formal employment and 3.0% of the business personnel irregularly used ITNs. Such results indicate that majority of the participants could use ITNs yet the children had ever suffered from malaria. The use of ITNs was also interrogated on the size of the household with 55.0% and 18.0% using the ITNs regularly for small and large household size respectively

The study also shows that most of ITNs were under the ownership of men as compared to women. In fact, 59.0% of men who owned ITNs used them regularly as compared to 14.0% women. According to the key informants, ownership of the household properties within the household circles is under men as compared to women. Households in Western Uganda have taken patriarchy form of headship where men inherit it through cultural ties since ancient day and it is still an ongoing process. The key informants also noted "*some of family properties which could be bought by women are recognized under the control and ownership of men*." Such arrangement stems from the cultural ties rather than any other basis.

The study also reveals that 34.3% of the respondents with income below 100,000 and 38.7% above 100,000 a month would always use ITNs upon children under the age of five. On the other hand, 15.0% of the respondents with high level income (above 100,000 a month) and 12.0% of those below 100,000 a month could irregularly use ITNs on their children. According to the key informants, the use of ITNs in Rwentuha Town Council could not be associated with any forms of income since they are given free without costs from the government facilities. That the sources of malaria among children under the age of five need to be attributed to other factors rather than income. Moreover, the price of one ITN is less than 100,000 in the market. The key informants therefore asserted that associating the failure to use ITNs on children below the age of 5 to income is wrong.

Table 4.5 also shows that most children sleep under the ITNs and this is justified by 49.3% (less than the age 3) who could always use the ITNs and 23.7% (more than the age of 3) did the same. This according to the key informants depends on the wish of parents on who can use ITNs or not. Children cannot demand for the ITNs from the health facilities, do not have homes where they could use it from and have less knowledge for the importance of the ITNs.

The study established a difference in using ITNs on the basis of gender of the child. ITNs were mostly used at a boy child (60.7%) as compared to 39.3% of the girl child. The key informants noted that most of the children below ten sleep together. Rather than making different beds for children, most parents prefer having 2 – 3 children sleep together on the same bed rather than individual beds.

Rainy and dry seasons of the year were also examined upon which children under the age 5 use the ITNs. According to the findings, a large percentage (45.0%) always used ITNs during neither hot season nor rainy season; 19.0% during the hot season and 11.0% during the rainy seasons. The key informants noted that such variations could be main sources of malaria to the children. The study also found that 65.3% of the participants who could always use the ITNs had electricity or solar as the lighting system and 7.7% for the local candles. It is also shown that 29.7% of the participants using electricity / solar were using ITNs irregularly as compared to 6.3% of participants using local candles.

4.3.1 Analysis for the socio - economic factors

Analysis was done on parameters with positive responses as indicated in Table 4.6 and the likelihood effect on Table 4.7.

Table 4.6: Analysis for the socio - economic factors

Use of ITNs to a child		B	Std. Error	Wald	df	Sig.
Yes	Intercept	-2.271	1.838	1.526	1	.217
	Religion	.169	.327	.267	1	.605
	Occupation	.098	.306	.103	1	.748
	Household size	-.847	.317	7.113	1	.008
	Ownership of ITN	.246	.332	.547	1	.460
	Income status	-.537	.302	3.173	1	.075
	Number of children	-.120	.297	.162	1	.687
	Gender of children	.390	.302	1.669	1	.196
	Seasons of the year	.421	.166	6.421	1	.011
	Type of the house	.718	.554	1.681	1	.195
	Lighting systems	.864	.368	5.515	1	.019

Table 4.7: The Likelihood Ratio Tests for socio- economic factors

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	Df	Sig.
Intercept	242.140	1.549	1	.213
Religion	240.855	.264	1	.607
Occupation	240.694	.103	1	.748
Household size	247.679	7.088	1	.008
Ownership of ITN	241.129	.539	1	.463
Income status	243.848	3.257	1	.071
Number of Children	240.753	.162	1	.687
Gender of a child	242.289	1.698	1	.193
Season not using ITNs	247.048	6.457	1	.011
Type of House	242.243	1.653	1	.199
Lighting system	245.937	5.346	1	.021

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

From Table 4.6, only three socio-economic factors were found significantly hindering the utilization of ITNs to children under the age of 5. These include the household size with $P<.05$ *(*P = .008); the seasons where participants were not using ITNs (P = .011) and the lighting system (P = .021). Therefore, the null hypothesis for the three variables that they do not

significantly hinder utilization of ITNs to children under the age 5 is rejected for the alternatives. Using a binary logisticregression model for the likelihood ratio effect (Table 4.7), the hypothesis for three variables had an effect or influence utilization of ITNs and thus $H_0$1; and for the rest of the variables take H_0.

4.4 Cultural factors hindering utilization of ITNs

The second objective to this study was to examine the cultural factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council. Some of the cultural issues that were discussed are presented in Table 4.8.

Table 4.8: Cultural factors hindering utilization of ITNs

Statement	Responses	Frequency	Percent
Improper use of ITNs	Yes	236	78.7
	No	64	21.3
Belief to prevent malaria by ITNs	Positive	200	66.7
	Negative	100	33.3
ITNs cause discomfort when used at night	Yes	106	35.3
	No	194	64.7
Cultural values attached to use of ITNs to prevent malaria	Yes	235	78.3
	No	65	21.7

Table 4.8 shows that culturally, the study established improper use of ITNs with 78.7% with a "Yes" response and 21.3% with a "No" response. This information was supported by the key informants both from the health sector noted that the government always gives out ITNs and it is the duty of the people to use them properly.

> Upon the children, it is the duty of a parent to make sure that the children sleep well under ITNs. Some children can remove the net in the course of the night, other can forget to re-organize the net after waking up during the night. Such practices can be called improper use of the net with negative effects like being bitten by the mosquitoes that cause malaria. Some of the parents are irresponsive with less or no interest to care whether children sleep under mosquito net or not

The study also established that there were household heads who were interviewed with beliefs that ITNs do not prevent malaria. In their attitudes, the findings show that 66.7% positively believe that ITNs prevent malaria and 33.3% did not. From the key informants that were found at the government health facilities, there have been increased approaches to educate the masses about preventative measures that are associated with the use of net but this has not been taken important to some groups of people.

There are a group of household heads who asserted that ITNs cause discomfort to the children. Table 4.8 shows that 35.3% of the participants had a "Yes" response as opposed to 64.7% with a "No" response. The study also established that there are various assertions that are normally associated with ITNs by the grassroots people due to their tradition that have never been proved right. Most of the claims stem from the fact that some household heads or people do not have means to use or hang the net to their bed. Some household heads especially drunkard men do not have time to organize nets to the beds of their children since they arrive home late at night. These claims have been attached to various factors which are associated to culture to refuse any attempts to use ITNs. The study also established that there are some household heads who have taken it a cultural factor to make sure that the children under the age of 5 sleep under the ITNs.

4.4.1 Analysis for the cultural factors

Some of the quantitative data received were entered into the software and the results are presented in Table 4.9 and the likelihood binary test in Table 4.10.

Table 4.9: Analysis for the cultural factors

Use of ITNs to a child		B	Std. Error	Wald	Df	Sig.
Yes	Intercept	1.356	.832	2.659	1	.103
	Improper use of ITNs	.004	.333	.000	1	.991

Belief to prevent malaria by ITNs	.234	.308	.575	1	.448
ITNs cause discomfort when used at night	.554	.300	3.418	1	.064
Cultural values attached to use ITNs to prevent malaria	-.802	.310	6.670	1	.010

Table 4.10: The Likelihood Ratio Tests for cultural factors

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	89.474	2.672	1	.102
Improper use of ITNs	86.802	.000	1	.991
Belief to prevent malaria by ITNs	87.384	.582	1	.446
ITNs cause discomfort when used at night	90.359	3.557	1	.059
Cultural values to use ITNs to prevent malaria	93.330	6.528	1	.011

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Results presented in Table 4.9 show that the cultural values which are attached to the use of ITNs' prevention of malaria is a significant factor to hinder the utilization. It shows that $P<.05$ ($P = .010$) for cultural values attached to ITNs' prevention of malaria. The results from other factors are presented beyond the standard value of alpha. Using the binarylogistic regression model of analysis, the likelihood ratio effect (Table 4.10), the hypothesis for one variable has an effect or influence to the utilization of ITNs and thus $H_0 1$; yet the rest of the variables maintainH_0.

4.5 The Marriage Institutional factors hindering utilization of ITNs

Lastly, the study assessed the marriage institutional factors hindering utilization of ITNs in the households that the findings to this study were corrected from. The marriage institutional factors were mainly within the household confines especially the responsibility of married man and wife upon the use of ITNs on the child. The findings are presented in Table 4.11.

Table 4.11: Marriage institutionalfactors hindering utilization of ITNs

Statement	Responses	Frequency	Percent
Sleeping management	Sleep on beds	198	66.0
	Sleep on the floor	102	34.0
Who makes decision to use ITNs	Man	226	75.3
	Woman	74	24.7
Who supervises a child under ITNs at night	Man	97	32.3
	Woman	203	67.7
Number of children sleeping under ITNs	All Children	200	66.7
	Only below the age of 5	100	33.3
Where do children ever suffered from malaria sleep?	Have their own bed room	230	76.7
	Sleep with parents in the same bedroom	70	23.3

Accordingly, 66.0% of the participants had a "Yes" response that they sleep on beds and 34.0% had a "No" response. The study established that some of the children sleep on beds that cannot support the utilization of the ITNs and those who sleep on the floor have got similar related reasons not to use the net. To the key informants, the failure to use the ITNs is one of the weaknesses of the couples rather than sleeping management. It was stressed that parents are supposed to take care of their children as they grow. The children cannot afford to organize the ITNs onto their beds since they are too young without any knowledge. One of the community key informants asserted that; "*there is no sleeping management! Whether sleeping on the floor or bed, all are called sleeping at night. These children are given where to sleep, like using mattress and blankets! Then, the effort that gives the two cannot fail to organize ITNs."*

The study also established that the decision for the children to use the ITNs is mostly made by a man (75.3%) and women (24.7%). Table 4.11 shows that 67.3% supported the assertion that women supervise and 32.3% attribute supervision to men. The number of men however is too small as compared to women. The key informants noted that men regard waking at night to

check on their children as wastage of time and bothering. It therefore remains the concern of women to make sure that children sleep well under the ITNs.

The study also established that not all the children sleep under the ITNs. Table 4.11 shows that 66.7% of the participants said that all children sleep under the ITNs while 33.3% objected the assertion. Such variations are the main causes of malaria fever and ease a leeway for the mosquitoes to bite the children. In both cases, it is also indicated that 76.7% of the participants noted that the children who had got malaria had their own beds yet 23.3% asserted that they sleep with their parents in the same bedrooms.

4.5.1 Analysis of the marriage institutional factors on utilization of ITNs

A binary regression model of the marriage institutional factors for the utilization was run and the findings are presented in Table 4.12 and 4.13.

Table 4.12: Marriage institutional factors hindering utilization of ITNs

Use of ITNs to a child		B	Std. Error	Wald	df	Sig.
Yes	Intercept	-.581	1.190	.238	1	.625
	Sleeping management	-.062	.277	.050	1	.822
	Decision making to use ITNs	.354	.368	.926	1	.336
	Supervision of a child under ITNs	.530	.373	2.020	1	.155
	Number of Children Sleeping under ITNs	.567	.362	2.459	1	.117
	Children who suffered from malaria	-.335	.347	.936	1	.333

Table 4.13: The Likelihood Ratio Tests for marriage institutional factors

Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	67.865	.239	1	.625
Sleeping management	67.677	.050	1	.823
Who makes decision to use ITNs	68.572	.945	1	.331

Who supervises children sleeping under ITNs at night	69.643	2.016	1	.156
Number of children sleeping under ITNs	70.174	2.548	1	.110
Where do children ever suffered from malaria sleep?	68.551	.924	1	.336

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Results presented in Table 4.12 show that all the marriage institutional factors were not significant to the utilization of ITNs among children aged 5. Therefore, $P>.05$. The application to the binary logistic regression model of analysis shows no likelihood ratio effects and thus maintaining H_0.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter discussed the findings of the study, drew conclusions and made recommendations based on the study findings. It is important to assert that the discussion has been presented along the literature that has been reviewed in chapter two and the findings in chapter four. Like the content of the Health Utilization Model, this study shows that the success for the use of ITNs lies within the contextual factors rather than the external factors. In fact, the government and other institutions can supply ITNs but it the duty of the parents to practice sleeping under the nets. The discussion therefore is tailored on the household factors.

5.1. The socio-economic factors that hinder utilization of ITNs among children under-five

This study established the significance of the socio-economic factors towards ITNshindranceamong children under the age of five in RwentuhaTown Council. These factors include; level of education, religion, household size, income status, number of children below the age 5, gender of the child,occupation,ownership, season, type of house, and lighting system. Despite being factors hindering essentialutilization of ITNs, they can also be factors influencing utilization in another study. On the other hand, some factors can be presented significant more than others in a study, yet insignificant in another. It is due to this perspective that this study assessed dichotomous responses toward a dependent variable as regular and irregular utilization as presented conceptually. Therefore, while this study finds some of the factors significant within the context of Rwentuha Town Council, they can be not significant in another context. This does not mean that they do not hinder the utilization in that context. The quest to understand why certain factors are significant within one study and not in another study cannot disqualify them

from hindering or influencing utilization. Some of these reasons can be traced from the context, and the nature of data and how the data has been analyzed.

Nonetheless, this study interrogated gender in two perspectives; the gender of the parents or the household heads and the gender of the children under the age of 5. Under the household head, the study shows that gender is important towards utilization of ITNs since there is regular use and this is most especially among the mothers. Female headed householdsare likely to use nets to children under fiveat night than male headed household. Even in the male headed household, this study underlines the important role of female as indisputable towards the use of ITNs as the males hinder the use. This is because women or mothers place themselves better in carrying out domestic chores including health-related activities; particularly child related ones such as use of ITNs and administration of medicines as compared to males. Thus, while most mothers influence the utilization of ITNs, most fathers hinder the utilization of ITNs. Reasons in the gender dynamics towards the utilization and hindrance need to be researched since this study does not go extra-miles to apprehend this. The findings to this study are therefore similar to what Strachan et al. (2016) present from Ethiopia where mothers task themselves with nursing and growth of children. On the other hand, fathers perceive such roles tiring and hardly be regarded as men's roles. In yet another study from Zambia, Mazigoet al., (2010) show that gender is important in various ways and essentially vocal to the utilization and hindrance of ITNs. In the first instance, gender influences the demand for the bed nets and most women are knowledgeable about malaria and what type of mosquitoes causing the diseases in humans. In case a woman becomes pregnant, she seeks for malaria protection by buying the net and this applies when the child is born. Unfortunately, most men do not bother whether their wives use nets or not.

The findings also bring to the attention of the gender of a child or children in which boys are mostly given priority as compared to girls by most men. However, pregnant mothers always value all children the same for the purposes of growth and values attached to them in future. The findings to this study are similar to what Ucakacon, et al., (2011) that due to values attached to boys, fathers like protecting boy children as compared to girls. However, the scholars leave a question whether all boys are protected or it is a section of boys whose parents especially fathers consider important and to be protected against such disease. This question was however, not answered in this study and thus the need for an investigation.

The findings from this study show that the use of ITNs is higher within certain age bracket, 30 – 40 and reduces with other ages. Thus, age influences and hinders the utilization of ITNs among children under the age of 5. But there is no qualitative information attached to this establishment since this study was pure quantitative. According to Ucakaconet al., (2011), age of the care givers to the children matters most towards healthcare, breastfeeding and the support to grow. It is also significant to utilization of the ITNs as compared to most factors within the household. Ucakaconet al., (2011) state that despite being important towards the utilization of various items within the home environment, age is not positively significant like education of a mothers. The scholars note that education is vital to most situations in a family as compared to the rest of the factors.

Besides, the age of the parents, this study also examined the extent to which the age of child can hinder utilization of net. This stems from the fact that whenthe children are still young, they are limited to use the net. In fact, children who sleep with their parents on the same bed hardly suffer from malaria basing on the results to this study. But the practice of sleeping with the baby tasks parents to be careful at night since any scrumptious sleep can deform the baby. This agrees with

the findings byGarcia Garcia-Basteiroet al., (2011) who show a positive association between the use of ITN and the age of child. The older the child, the less likelihood to sleep underthe ITNs. The scholars show much emphasis from the mothers and father for the young child who sleep with the parents than the child above three years. Although the study shows that the less availability of insecticide treated nets can hinder utilization and its priority to households, the availability of the net does not attract the older children to sleep under them. The literature also reveals that children who are older, are given a though by the caretakers or parents that they are able to use nets without the intervention. However, this according to literature is wrong since the old children have less concern to their lives although some caretakers or parents believe so. In such thinking, the mosquitoes have to bite old children and the consequence is being infected by malaria.

The findings from this study show that education is important towards the utilization of ITNs and this stretches from secondary level to the university level. The study shows that it is education that influences women and men to continue their attachment to seek for information about health, and its significance is essential up to the end. However, less education also is shown hindering utilization of the ITNs and this is also associated to some of the educated according to those that agree with irregular use of ITNs. Wanziraet al., (2017) show that the utilization of ITNs among under five children in Uganda is higher among the educated groups as compared to the uneducated persons. It is also presented that people living in rural areas has limited opportunities in use of ITNs as compared to the urban dwellers. The scholars find a positive and significant association between ITNs' use and education. The highly educated persons utilize ITNs more than the rest of the persons in any community although a section of the educated persons fall

similar victims towards hindering the practice. This is because of their knowledge about dangerous nature of the diseases and the approach to prevention using ITNs.

What is important to this study is the fact that it was conducted from the rural areas, among educated and non-educated. Observation from Table 4.1 reveals the fact that even uneducated people were regularly using ITNs. However, there is a large margin between the two categories. In agreement to the findings by Tassew and Hopkins (2017), it is better to infer that education, positively is associated to utilization of ITNs. This utilization is however a subject to levels of education rather than uniform significance.

Religion is yet another factor which this study investigated and the findings show that it supports utilization and also hinders to some people. The support to this study is higher in Christianity religion as compared to Muslims. This however does not mean that Muslims hinder the utilization of ITNs; rather there are Muslims and Christians who are victims. The varied findings justify the view that use anda hindrance to ITNs is associated to other factors within the households rather than religious faith. In line with Strachan et al. (2016), there is a positive association between religion and ITN utilization, rather than an association between hindrance and ITNs. Like the findings of this study that shows Christians leading in utilizing ITNs regularly. Strachan *et al.*, (2016) had the same conclusion. In their study, Christians are presented with higher levels of ITNs utilization compared to other faithful believers. The scholar attributes this to the world wide teaching of Christian leaders not only on pulpit rather to different fora like Christian radios, burial ceremonies and evening prayers.

The findings to this study also show that the house hold size and number of people in it hinders the utilization of the ITNs although majority in such households regularly utilize ITNs. If the household is small, the number in such household can easily overwhelm the sources like income

to buy the net to be used by the children. In fact, as the number of the children in the household increase, heads find it hard to buy additional nets as government free nets grow old. In line with what Batwalaet al., (2011) present, there is agreement between the two studies. The number of young children in a household determines the use of mosquito bed nets. The households with children less than five years of age are more likely to use bed nets than those with children over five years. The fact that this study was conducted from the rural areas and where more than 5 children were witnessed within households, it is one of the reasons why some individuals in the households never use the nets and thus a reason to be infected with malaria. The findings are also related to what Tassew and Deressa, (2017) present from Ethiopian that the fewer the number of children under the age of five years, the more likelihood to sleep under an ITNs. This is because parents are more likely to participate in malaria prevention activities when children are still young than when children are old. In fact, the older children are either thrown out from the parents' bedroom or parents' house to join boys' quarters.

Although most of ITNs for this study come from the government and they are free given to the people, the findings still reveal that income in the household can either hinder or influence utilization of ITNs. Income status was interrogated as the cause in the aftermath to the government nets. In such circumstances, it becomes a hindering factor as well as supportive to the utilization of ITNs. Humphrey and Mazigo (2010) find a positive relationship between income and use of ITNs in Nigeria rather than being a hindrance. Nonetheless, limited incomes or no income per month equally hinder the utilization of the ITNs. In a study byTassew and Deressa (2017), children from the households that are economically stable are more likely to sleep under ITNs than children from poor households in Ethiopia. This is because the well economically families can easily get income to purchase more nets as compared to the rest of the

families. What is important is that that this study was carried among households who accessed nets from government facilities without costs. Could irregular use of the net due to the fact that they are given by the government? If yes, why do families / household thatbuy their own nets also suffer from the same? This study therefore leaves behind a need to assess the effectiveness of the government supplied nets towards malaria prevention.

The study also critiqued sleeping arrangement in a house which increase the chances to either sleep in the net or not. In some cases, householdswho slept on floorsare less likely to use ITNs compared to those sleeping on beds. This is because a floor has no placements for holding a net as compared to a bed. This finding can be compared to what Hetzelet al., (2012) present from Nigeria where most pregnant mothers sleeping on the floor would hardly deliver due to malaria. In comparison to their counter parts, women sleeping on the bed are more respected by their husbands and can deliver since they are protected by the net. In their study from Nigeria, it is presented that the urban area has high use of ITNs among pregnant women compared to the rural areas despite the fact that the rural areas hashigher levels of ownership of ITNs. Therefore, the increase in ownership of ITNs does not necessarily means an increase in ITNs utilization. Rather, utilization or hindrance to utilization is a result of contextual factors which are embedded within the sleeping arrangements and attitude towards the usefulness of the bed.

This study also reveals the fact that seasons of the year also hinder the utilization of the net due to people's perception towards the season. While there are variations that show the hindrance to use in both seasons, the number of the people using the net upon their children during both rainy and sunny periods is presented high. Humphrey andMazigo (2010) show that there is no relationship between utilization of ITNs on children and the yearly season. That some caretakers assume mosquitoes exist within the rainy seasons and not sunny days. Such misconception must

be removed from the people through mass sensitization and through their places of worship since people attach life to God more than their own government that take keen interest to distribute the nets.

Other factors hindering the utilization of ITNs include the nature of the houses and lighting systems. In fact, round houses are presented hindering utilization of ITNs as compared to other forms of houses. This is because of their round shaped nature which makes difficult for the people to organize the nets on their beds. Among the pastoral communities of Africa who still live in round houses, Senaet al., (2013) finds fewer old people utilizing the net on their beds. In such circumstances, it becomes difficult for the older people thinking about utilizing nets for the case of their children. The ethnic tribes in northeastern Uganda, Kenya, South Sudan, Namibia and West-Africa have similar related culture and live in round houses that hinder the utilization of ITNs.

Lastly, the lighting systems were also associated with practices that hinder the utilization of ITNs and this is common with candle lighting which is common system in rural areas. The findings from this study have a greater association with what Ucakaconet al., (2011) found among women in Kimanyedde Sub-County where women feared buying mosquito nets with the view that they can be easily burnt by candles as their children go to sleep. Besides, in case one is holding a candle, the blowing of windy air inside the house can easily make the lighting candle burn the net, which in long run set the whole house on the blended. In Mukono District, Batwalaet al., (2011) shows that most women prefer the use of ITNs since their houses are fully electrified. The socio-economic factors hindering utilization of ITNs in this study are much related to what other scholars present from different contexts. As already noted, while effort towards utilization of mosquito nets has increased stemming from international and national levels upon pregnant

mother and children; and whereas many people claim having been adapted sleeping under the net practices; malaria is still the leading cause of death in Africa among mother and children. While there is an increasing number of people accessing net from the government facilities and buying the nets from individual shops, the increasing cases of malaria is a justification of gaps in utilization. Therefore, in addition to social economic factors, the cultural and marriage institutional / intra factors are also discussion in this section.

5.1.1 Cultural factors hindering the utilization of ITNs

There are various cultural related factors which hinder utilization of the ITNs across different people while some of the other factors are mere perception and what can be termed as respect. For example, in Focused Group Discussions byUcakaconet al., (2011) Sub- from KimenyenddeCounty, women fear to buy mosquito nets since their husband would about the sources of money and the fact husbands do not care about the healthcare of the families, women decide not to sleep under the mosquito nets. While this argument can be attached to fear and respect for the husband's views, such arguments cannot withstand this study where ITNs have been freely given to the people by the Government through the health facilities. What is highly related is what is presented from Mukono by Batwalaet al., (2011) where participants noted with fear to use mosquito nets since people believe thatITNs contain chemicals harmful to adults, children and pregnant women.

Nonetheless, this is never a claim to this study. In fact, this study highlights that culture has been behind improper use of the ITNs and this has hindered the utilization. This is presented in different ways through which women and men disassociate themselves from utilizing the nets to prevent their children from malaria. For example, the utilization of the net upon children presents

responsibility of mothers rather than fathers. This compels a question that in absence of the mothers within the households, children have either to sleep under the net or admit to be bitten by the mosquitoes. The study also establishes that some children who sleep in a separate room from where parents sleep can carelessly avoid utilization of the nets. Improper use of the net falls under misconceptions which have been presented by Okafor and Odeyemi (2012) in their study from Nigeria. That aware that children have grown up observing utilization of the net by some of their parents, it is believed that at the point of separating the children to their own houses and rooms, they would practice the same. This however has never been the case since malaria among such children has been at an increasing rate.

This study establishes that there are still people in Rwentuha Town Council who still have a negative attitude that ITNs do not prevent malaria and this stems from the continued occupancies of malaria cases in the area. This argument is related to what Wanziraet al., (2017) present in their study from Mbarara District. Such negative attitude is compelling people to utilize other possible means like drinking boiled water, improving sanitation, clearing bushy areas, burning the mosquito coils and good nutrition. Despite such practices in attempt to avoid sleeping in the mosquito nets, malaria has continued. Such groups of people need to realize that all the practices adhered to, do not protect the people or children while sleeping. In such lapses, mosquitoes find opportunities to bite children and other members of the households and the consequences have been witnessed through increasing cases of malaria.

The findings to this study show a number of the responses that ITNs cause discomfort at night and thus hindering the utilization. Like other studies across the globe, this has remained an attitude rather than an evidence since there is no person who has ever died due to the use of ITNs.

What is clear is the fact that such finding is similar to what Graves et al., (2011) stated as a reason for not using the net. That people advance the view that mosquito net makes one discomfort, increase heat at night and inconvenience. This is a weak belief since the net are always protective approach to the young rather than the old persons. Moreover, there has never been a study that children increase the rate of crying when sleeping under the ITNs. Wanziraetal., (2017) also assert that discomfort which some a few cases always experience must be due to weather rather than being caused by the mosquito nets.

5.1.2 The marriage institutional factors that hinder utilization of ITNs

The marriage / intra household factors relate between a man and a woman in their daily or night administration of their lives. While women and men can be seen accessing the mosquito nets during the day, it is hard to prove that what has been received is used during the night. Secondly, enclosing the bed with a mosquito net does not necessarily mean that the net is used at night. There is also a question about the nature and shape of the net used or enclosed around the bed. Does the net have holes that can enable mosquitoes enter into the net during the night and bite an individual? Was the net well placed around the bed to bar the entrance of the mosquitoes? For the purposes of the children, various questions within the marriage institution are also asked. These include; who takes care upon the children at night? Do the children sleep with a serious caretaker? Who organizes the net for the children after they have wakened-up for a short call? Do the children re-enter well into the net in such situations? By answering questions of this kind, one can easily satisfy the discussion that the preventative approach by the net is either satisfactory or lacking.

Accordingly, this study shows that there are children who sleep on the floor at night. These are children whose fathers cannot afford the prices of beds and thus find it harder to organize the bedaround their places of sleep. The underlying question remains whether these children sleep on mattress or other beddings? In a study conducted from Gambia by Mazigoet al., (2010), one of the main factors hindering utilization of the net is sleeping on the floor. It becomes hard for the mothers to utilize the nets. Some children sleep in the sitting rooms, while others sleep in the dining rooms. During the day, Mazigoet al., (2010) show that such places are used for different purposes and well utilized as bedrooms at night. Even when the mosquito nets are used in such circumstances, there are incidents of the nights where one can feel tired and sleep without the net and to receive regrets is only after getting malaria.

5.2Conclusion

Based on the findings and the discussions, the study concludes that there are significant socio-economic factors that hinder theutilization of ITNs within households upon the children below five years of age. However, these factors stand with a highly probability to influence the utilization on the other hand. These socio-economic factors included gender of the household head, age of household head, level of education, religion, household size, income status, number of children below 5, gender of the child and age of the child which have been discussed.

This study brings the fact that there are some of the cultural factors hindering utilization of ITNs among children under-five years in Rwentuha town council. Importantly to note is the fact that some of these factors can hinder regular use of the nets in one household while support the same use in another family. Therefore, malaria prevention is essential and people need to do away with such misconceptions in order to prevent malaria. Most of the cultural issues are related to beliefs and this starts believing in God. The fact that most of the participants were Christians yet

Christianity overwhelmingly supports the use of mosquito nets, the church must be used alongside the distribution of the nets. As an approach, the government should engage the church or religious leaders to supply the nets in the under the laity of God the Father, the Son and Holy Spirit.

The focus to utilize the mosquito nets needs to be based on the family or the household life. This is what normally becomes the basis of the community in the Sub-Saharan Africa and Uganda in particular. Marriage institution does not come from the air rather comes between two people who wish to live and make life for the future reference. However, this does not take place when there are no children. Therefore, mothers and father within the family need to increase their effort towards the utilization of net through cooperation, decision making and helping each other for the proper growth of their children.

5.3 Recommendations

Since this study points out that expectant mothers and children under five years of age were the beneficiaries of the free distribution of ITNs, the government of Uganda through the Ministry of Health should plan to have an increase in number of free ITNs distributed to households. Such a strategy can eliminate the possibility of the adults using ITNs made for the young children who may not have the first priority for using the nets due to scarcity of ITNs in the household.

Behavior change strategy through campaigns at the community level should be used to provide a platform for both the healthcare workers to learn about the perceptions of caregivers in order to know them better and also to use that opportunity to educate caregivers how to properly use ITNs and their importance in malaria prevention among the under-fives.

The Ministry of Health should increase regular community sensitization campaigns to ensure greater awareness of the importance of sleeping under insecticide treated nets among the vulnerable groups.

5.4 Suggestions for further research

It is suggested that a further research should be conducted on; Parenting at night as a strategy to increase utilization of ITNs at household level.

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Appendices

Appendix I: Questionnaire for Respondents

Dear Respondent,

I am **Tumushabe Abel** a student of Bishop Stuart University, pursuing a master degree in public health. As part of the academic requirements, I am carrying out a research on "**factors hindering utilization of insecticide treated nets in households with children under five years of age in Rwentuha town council, Bushenyi district**". I am therefore requesting you to spare some time and fill this questionnaire. The information you give will be treated confidentially and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose.

Thank you for your cooperation.

Address

Location of household…….. Parish ……..

Cell ……. Village …….

SECTION A: General information

1. Gender a). Male b). Female

2. Age bracket (years)

a) 18-29 b) 30-40 c) 41 and above

3. Marital status

a) Never married b) Married

4. Highest level of education

a) No education b) primary c) secondary d) Diploma e) Degree

5).Religious affiliation

a) Christian b) Muslim

6). What is your source of income?

a) Farming b) Salary c) Business d) none

SECTION B: Intra-household dynamics and utilization of nets

6. What kind of house structure do you stay in?

a) Grass thatched/made of mad b) Semi-permanent c) Permanent

7. How many rooms does your house have?

a) Below 2 b) 3 – 5 c) 6 and above

8. How many people sleep in this household? ……

9. How many children under five years are in this household? ……

10. How are they related to you?

a) Own children b) Niece/Nephew c) Siblings

11. What sleeping arrangements do you have in place?

a) Children under five sleep alone

b) Children sleep with parents

c) Parents sleep alone

d) Children under five years with older siblings

12. Do you have beds for all household under 5 occupants?

a) Yes b) No

13. If no, whom do they sleep with?

a) Parents b) Elder siblings c) Others…….

14. Do you know anything about mosquito nets?

a) Yes b) No

15. If yes, what do you know?

……

……

……

16. What kind of mosquito nets do you know?

a) Long life net

b) Insecticide Treated mosquito nets

c) Ordinary nets

d) Both treated and untreated mosquito nets

e) Others……

17. Do you have any mosquito nets in your house?

a) Yes b) No

18. What mosquito net do you sleep under?

a) Insecticide treated mosquito net

b) Ordinary nets

c) Long life mosquito treated net

19. If, ITNs, how many mosquito nets do you have in your household?

a) More than 3 b) 3 nets c) 2 nets d) 1 net

20. Do your children under five years sleep under a ITNs?

a) Yes b) No

20. How many children under five sleep under ITNs in your household? ……

21. If yes, for how long have your children under five years been sleeping under the mosquito net?

a) Every night b) Sometimes c) Never

22. What sizes of nets are used in this household?

a) Single size b) Double c) Triple/King

23. How consistent do children below 5 sleep under the net during night?

a) Throughout the night during the season for mosquitoes

b) All year round

c) Most part of the night

d) Some part of the night

24. How did you acquire the net (s)?

a) Bought them ourselves

b) Got them through government health facility

c) Supplied by NGO

SECTION B: Socio-economic factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council

25. Could there be any socio-economic factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?

a) Yes b) No

26. If yes, mention some of these factors?

……

……

……

……

27. If no, justify your answer?

……

……

……

……

SECTION C: Cultural factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council

28. Could there be any cultural factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?

a) Yes b) No

29. If yes, mention some of these factors?

……
……
……
……

30. If no, justify your answer?

……
……
……
……

SECTION D:Marriage institutional factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council

31. Could there be any marriage institutional factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?

a) Yes b) No

32. If yes, mention some of these factors?

……
……
……
……

33. If no, justify your answer?

……
……
……
……

34. Could there be any strategies to address the above socio-economic, cultural and marriage institutional issues hindering the utilization of ITNs among children under-five

a. Yes
b. No

35. If yes, what are some of these strategies?

……
……
…….

36. Any last remarks?

……
……
…….

Thank you for your time

Appendix II: Interview for Key Informants

Dear Respondent,

I am **Tumushabe Abel** a student of Bishop Stuart University, pursuing a master degree in public health. As part of the academic requirements, I am carrying out a research on "**factors hindering utilization of insecticide treated nets in households with children under five years of age in Rwentuha town council, Bushenyi district**". I am therefore requesting you to spare some time and fill this questionnaire. The information you give will be treated confidentially and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose.

1. What is your highest level of education?
2. What kind of house structure do most community members stay in?
3. What is the average number of children under five years living in these houses?
4. What are the common sleeping arrangements in place?
5. Is it a common practice for children under five years to sleep under ITNs in this area?
6. How consistent do children below 5 sleep under the net during night?
7. What are the socio-economic factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?
8. What are the cultural factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?
9. What are the marriageinstitutional factors hindering the utilization of ITNs among children under-five in Rwentuha Town Council?
10. What are the strategies to address the above socio-economic, cultural and marriage institutional issues hindering the utilization of ITNs among children under-five?

Thank you for your time.

Appendix III: Work Plan

S/N	Activity	Timing							Responsible Person(s)
		O	**N**	**D/J**	**F**	**M/A**	**M/J**	**J/A**	
1	Research topic selection and approval	■	■						Researcher and supervisor
2	Proposal writing, correction from the supervisor, signing and handover for making, REC Approval		■	■					Researcher and supervisor
3	Correcting the proposal, editing the research tool				■	■			Researcher and supervisor
4	Collecting data						■	■	Researcher
5	Coding, Compiling, analyzing and interpreting data Writing a research report							■	Researcher and supervisor
6	Distribution of research report							■	Researcher

Appendix IV: Budget

Cost description	Unit	Qty	Unit	Unit price	Total
Stationery					
Pens		10		Shs.500	Shs.5,000
Memory stick		5		Shs.1,000	Shs.5,000
Printing paper	Reams	3		Shs.10,000	Shs.30,000
Secretarial work					
Typesetting proposal	Pages	30	3	Shs.1000	Shs.90,000
Photocopying	Pages	10	150	Shs.100	Shs.150,000
Typesetting, printing	Pages	100	3	Shs.1000	Shs.300,000
Production& binding	Books	1	30	Shs.5,000	Shs.150,000
Allowances					
Statistician		1	5	Shs.50,000	Shs.250,000
Lunch		1	30	Shs.4000	Shs.120,000
Airtime					Shs.50,000
Transport					Shs.100,000
Total					**1,250,000=**

Appendix V:consent form (Runyankore)

OKWIKIIRIZA OKUGARIKAMU EBIBUUZO BY'KUKWATA AHA NKORESA Y'OBUTIMBA BWE'ENSIRI.

OMUTWE: "Factors hindering utilization of insecticide treated nets in households with children under five years of age in Rwentuha town council, Bushenyi district".

OMUKYONDOZI:
OMUKYONDOZI OMUKURU: Tumushabe Abel, owa "Bishop Stuart University"
Esiimu: 0774168874 / 0705278013

ENTANDIKIRIRO:

Omusahwijagwensirinendwaraerikuteganisaamagara ,erikureetwaakakookoka "Plasmodium" (sato, 2021)

Omushwijagwensirinigukukwatawarumwaensiriyenkazieineakaookoka "plasmodium" kandinigukirakukwataabaanaabaryahansiyemyaakaetanobaababaterinzire.

Omunsiyoonaabantuabarikwendakwingananobukaikurubushatunemitwaromakumiabiiribariaha rutezyorwokukwatwaomushwijagwensiri (Yir-Erongi, Bayor, Ayensu, GbendemanaBoateng, 2018). Admasie, ZembanaPaulos (2018) aba nibagambanguabantuabarikwendakwinganaobukeikuru (914) bakababeineomushwijagwensirikandiabantubarikwingana 438,000 bakafaomumwakagwa 2015. 91% yabantuabafiirebaabanibarugaomu Africa kandi 70% yabantu abo bakababariabaanabeineemyaakayahansiyetaano (Papaloannou) UtzigernaVountsou, 2019).

Okubyaamaomukatimbakensiriakarimuomubazinomuringogumwegwokerindaomushwijagw'ensi riomumakamiingi (Kateera et al., 2015).
Nahabwekyookugiraakatimbakensirinikayambaomukakoresa (Strachan et.,2016)

Uganda eriomuamahangaga Africa agarikuteganisibwaomushwijagwensiri (MOH,2017). Omushwijagwensirinigukureterawafawakyerererwakuguraguza. Abantu 20% abarikubabariomwirwarironibababeineomushwijagwensiri.
Ekyonikiretwaomuringoguturikuturamu, enyikirizayaitu, enshongazeeka, n'zobushweere.

OmuriRwentuhatauniokukoresaakatimbanikukyewashanirizananihangaryoona.

Ekyonikyokiretsireomukyondooziyimukakukyonzozaenshongaezirikureteraabantu Babura kukoresaobutimbabwensiri.

Okuhwerwaokuriomukukyondooza

Ebirarugyeomukyondozanibyaijakureteraahakumanyamunonga aha mushwijagwensirinanokwerindaomubaanabaryahansiy'emyaakaetaano.

Nikizakureteraokumanyaenshongaeziriahakaezirikureteraabantu Babura kukoresaakatimbakensiri.

Ebyarayihemunibizakuhaamakuruebitongorebya government, ebitongoreebitaribyagavumentnanebyaabantuabuntuabaineomwetegwokukoresaakatimbikensirio mukurwanisaomushwaijagwensiri. Nikizakuyamba abo abarikukoraamatekaomugavumentkikoraamatekamarungiahakurwanisaomushwijagwensiri. Nikizakuyambaabandiabashomikweyongyerakukyondoozaahakukoresaakatimbakensiriahakurwanisaomushwijagwensiri.

Omushomooguniguzakuyambaomukyondozikutungaebimweebirikwendwaomukutungamasters Degree yebyamagaragaabantueya University ya Bishop Stuart.

Enshongayokucondoza: Uganda nensiyakashatuerikuteganisibwaomushwijagwensiriyarugaahihangarya Congo (DRC) na Nigeria. Omushwijagwensirinemweahandwaraezirikureteraomuntuyafayabaacererirwekuzaomwirwarirokuraguzaokukiraomubaanaabeineemyaakayahansiyetaano.

Endwaranereetaobucweka 25 ahar'iganakuhisyaahariobucweka 40 ahariiganayabantuboonaabarikutayayiraamarwariro .nahabwekyokwendakwerindaomushwijagw'nsirinanebizibuebirikugurugamu, okugiraakatimbaomumakananokukakoresagyekikanyireomwihanga.

Rwentuhanetauniemweyaburengyerweizoobabwa Uganda aha gavumentkwonkanikyorekanguabantubabwiinekonkatibakubukores. Ekyonikyokirikureteraomushwijagwakanyaomubaanaabariahansi ye emyaakaetaano.

Nahabwekyoebirarugeomukukyondozanibizakuyambaabarikutekatekyeraebyamagarakurebaenshongaerikureteraabantubaburakukoresaobutimbabwensiri.

Embariira.

Nihazakubahatarihosentezoonaezahebweowagarukyemuebibuzoebirikukwata aha nkoresay'obutimbabweensiri. ahabwokubaomukyondozinazakubanakushangaomukaowaawe.

Okwinganisaburiomwe. Orazeomumushomoogunazakubanayingaananondijoowaguzamu. Nihazakubahatarihookushoororaomubantu.

Obugabebwaabantu.

Omushomooguboonaabaraguzemunibazakubanibahebwaekitinisakandinibazakubanibikirizibwakugambaekibarikwenda aha mushomo.

Eshaaha: Omukyondozanazakumaraobwiireburiahadakiika 20 – 30.

OkuhayoEbyarugemu:,Ebyarugemucopinezakuhebwaishomerorya graduate aha University ya Bishop Stuart, endijocopinazakugihaorikukuriraebyamagaraomutauniyaRwentuha.

Okukumaebihama:
Ebirarugyeomukukyondozanibizakukumwaahagatiy'omucondozinanomukyondozibwa.

Owabihamya: Okuhamibwakwa (IRB/REC) nikuzakurugaomu TASO Uganda.

EkihandiikoKyokwiriza:

OKWIKIRIZA.

Nyowe _____
ninyikirizanguebyarugaomumushomoogutibikuzakuteganisaahabyokukoresaakatimbakensiri.
Omukukoresaebinamugambireeiziinaryangyetiririkuzakugambwa.
Ninkimanyanayendaomushomonayendanigurugamu, nimpamyaekiahabwokusayiningaegi form.
Bamanyisaahabyokukwataahamushomoogukandiogunikirizakugutahamu.

OMUKYONDOZIBWA:

Eiziina: _____omukono/ekinkumu:_____

Ebiroby'okwezi: _____

OMUKYONDOZA:

Eiziina: _____Omukono (omukyondozi): _____

Ebirobyokwezi: _____

INFORMED CONSENT FOR KEY INFORMANTS

Title: Factors hindering utilization of insecticide treated nets in house holds with children under five years of age in Rwentuha town council, Bushenyi district.

Investigators:

Principle Investigator; Tumushabe Abel, of Bishop Stuart University.

Tel. 0774168874/0705278013

Background and rationale for the study:

Malaria is a life threatening disease that is caused by Plasmodium parasites(Sato, 2021). It is transmitted through the bites of infected female Anopheles mosquitoes and infants who are less than five years (5) years of age are at the high risk of getting infected if not protected(Roberts & Matthews, 2016).

Globally, about half of the population (3.2 billion people) is at risk of getting malaria(Yir-Erong, Bayor, Ayensu, Gbedema, & Boateng, 2018).Admasie, Zemba and Paulos (2018) show that an estimated 214 million cases of malaria and 438,000 malaria deaths were enumerated in 2015. About 91% of these deaths occurred in Africa and from this, more than 70% of all the deaths occurred in children who are less than 5 years old(Papaioannou, Utzinger, & Vounatsou, 2019).

Use of Insecticide treated nets is among malaria prevention measures used widely in many households (Kateera et al., 2015). Therefore, ownership of an Insect Treated Net (ITNs) is important in influencing the use of ITNs (Strachan et al., 2016). Due to its central role in malaria prevention, ownership of ITNs has been emphasized in many African countries. For instance, ownership in Bioko Island in Equatorial Guinea was enhanced in 2007 where 110,000 ITNs were distributed to households.

In areas where ownership of ITNs has been enhanced, factors such as area of residence, knowledge on malaria transmission, presence of fever in a child, age, gender and occupational status of the household head and the household size have been identified as significant determinants of use of ITNs. For instance, a study in Ethiopia by Singh and Rogerson (2013) found a unit increase in the size of household increased the odds of ownership of a net more than twice.

Uganda is one the countries with malaria burden in Africa (MOH, 2017). Malaria is one of the most challenging diseases where delayed or complete lack of treatment leads to serious health complications like death (MOH, 2017). The burden of malaria remains unacceptably high, especially among children under five and pregnant women. Malaria accounts for 25-40% of all outpatient visits at healthcare facilities in Uganda (MOH, 2014). Also, up to 20% of all hospital admissions and 15% of inpatient deaths are due to malaria (Lengeler, 2016). To prevent malaria related complications, household possession and use of ITNs has become a common practice in the country.

Dowhaniuk (2021) argued that although the government has put much effort to have 90% coverage in ITNs, household ownership has remained seemingly high compared to utilization especially among under five years children. Malaria continues to be the leading cause of death among under-fives despite the ITNs intervention. One in four households across the country at least one has ITN and 12% own more than one. The proportion of households with a net has doubled from 13 percent in 2000-2001 to 26 percent in 2014-2015 (MOH, 2014). The proportion of under five children sleeping under a mosquito net at 7.3 percent but has since reduced to 3.2 percent(Wanzira et al*.,* 2017). This is due to unknown socio-economic factors. There is still a wide gap between net possession and use in Uganda. Knowing the factors affecting ITNs utilization is essential to achieve the national targets of ITN use and zeroing down child deaths due to malaria (Batwala et al., 2011).

In Bushenyi district and Rwentuha Town Council in particular, the rate of ITNs utilization among under-5 old children is very low, which is against the national target(Ivan, Taremwa et al., 2017). Though various predictors have been studied in the neighborhood areas, certain socio-demographic factors of ITNs utilization to under-5 years old children have not been addressed well in Rwentuha Town Council. Scientific evidence is needed to uncover and support possible associations between these factors and ITNs utilization among under-5 years old children to prevent malaria.

Rationale for the proposed research. Uganda is the third largest country with malaria burden in the world after Democratic Republic of Congo (DRC) and Nigeria(Lechthaler et al., 2019). Malaria is one of the most challenging diseases where delayed or complete lack of treatment leads to serious health complications and death. The burden of malaria in Uganda remains unacceptably high, especially among children under five and pregnant women(Ivan Mugisha Taremwa et al., 2020). The diseases accounts for 25-40% of all outpatient visits at healthcare facilities and up to 20% of all hospital admissions and 15% of inpatient deaths are due to malaria(Ssempiira et al., 2018). To prevent its related complications, household possession and use of Insecticide Treated mosquito Nets (ITNs) has become a common practice in the country.

Rwentuha is one of the Town Councils in western Uganda where government has made a considerable effort to distribute ITNs for malaria control. Although ITNs distribution has been consistent since 2009,discrepancy still exists between ownership and use of nets(Rek et al., 2020). There is a gap within the household ownership and utilization where by a relatively big number of children rarely sleep under ITNs. This explains the alarming malaria cases among children under five in the area. A lot of emphasis has been put on ownership but less attention has been given to utilization and factors deterring utilization(Dantas, Singh, & Lample, 2020). There is limited information on the factors deterring ITN utilization given that a few studies have been conducted to assess the factors in the area.

The information generated from this study therefore, may assist planners to focus on factors hindering utilization and explore ways of increasing utilization of ITNs among children.

Benefit

The findings of this study will contribute to the existing body of knowledge concerning the complex nature of malaria prevention among children under five years and specifically the intra-household dynamics that affect the use of ITNs among children under five years. It will also contribute to the understanding of intra-household factors that affect use of ITNs and challenges involved in prevention of malaria among children under five years.

The findings can be used as source of information to non- Governmental Organizations, government and private enterprises interested in promotion of ITNs in the fight against malaria. To the policy makers and those from the ministry of health specifically, the information obtained will provide useful guide for formulating appropriate policies and programs for ITNs.

The findings will add on the existing literature for academicians and researchers since the findings may be used as a basis for further research on ITNs in malaria prevention. The gaps identified may be explored for further research. Lastly, the study will be essential to the students or researcher since it enables to the fulfillment of the requirements for the award of a Master's Degree of Public Health of Bishop Stuart University.

Cost: There will be no cost to be given to the respondents given that they will be found at their homes of residence for interviewing.

Justice. Every participant will be treated equally without giving a particular priority to a certain group. The respondents will have equal chances of being selected for the study.

Human Rights: in the course of the study, respondents will be treated with utmost respect for their human rights. They will be entitled to their decisions and will be respected.
Time: The session will be between 20 – 30minutes of your time.
Dissemination of results: copies of the original report will be submitted to the directorate of graduate school Bishop Stuart University. Research feedback will be distributed to the office of the health Inspector- Rwentuha Town council.
Ethical approval: Ethical approval (IRB/REC) for the study will be obtained from TASO – Uganda.

Study Participants:

The study populationwill comprise of parents/care-takers of under fivechildrenwho are owners of bed-nets and key informants like the health workers, VHTs and town council health inspector.

Risks/ Discomfort: There is no risk associated with the study and the participation will take place at your natural setting, you are free to ask any question about the study. Your participation is voluntary, you have the right to withdraw at any time you wish to quit.

Consent: Statement of consent after understanding the study and a signature portion.

STATEMENT OF CONSENT.

I have read information as described to me on what is going to be done, the risks, the benefits involved and my rights regarding this study.

I understand that my decision to participate in this study will not alter my usual utilization of ITNs.

In the use of this information, my identity will be concealed.

I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate.

A copy of this form will be provided to me.

Name …… signature of the interviewer /person obtaining information consent.

Date ……..

List of participants'	Signature	Date
1……..	……..	……...
2…….	…….	…….