

FACTORS AFFECTING UTILIZATION OF INSECTICIDE TREATED NETS IN
HOUSEHOLDS AMONG CHILDREN UNDER FIVE YEARS OF
AGE IN KAZO TOWN COUNCIL, KAZO DISTRICT

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A RESEARCH REPORT SUBMITTED TO THE FACULTY MEDICINE IN
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DECLARATION

I, **TUMWEBAZE RODGERS** hereby declare that this Bachelor of Environmental Health Science dissertation titled "Factors affecting utilization of insecticide treated nets in households among children under five years of age in Kazo town council, Kazo district" is entirely my own work under the supervision of Mr. Mugumya Ivan This work has never been presented to any university or any other institution of higher learning by any person for any academic award. All the sources quoted or used have been clearly indicated and acknowledged by appropriate and complete references. I would therefore like to present it for the award of a degree of

Environmental Health Sciences of Ka bale University.

06/05/2022

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APPROVAL

This is to certify that this dissertation was developed by **Tumwebaze Rodgers** under my guidance and supervision.

Date:06/05/2022

Signature: :::--

Mr. Mugumya Ivan

ACADEMIC SUPERVISOR)

DEDICATION

With great pleasure I dedicate this research report to my beloved parents who contribution towards the completion of this task, for their encouragement, vision and advice towards completion of this research report.

ACKNOWLEDGEMENTS

extend my appreciations to my research Supervisor Mr. Mugumya Ivan, for his time, patience and efforts in guiding me as I worked on this report. May the almighty God reward you abundantly

Also special thanks goes to the entire academic and administrative staff of Kabale University, School of Medicine for giving me the knowledge and skills required to improve Environmental Health in communities

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I further extend my heartfelt gratitude to the Lord Almighty for this far he has brought me, it was not going to be possible to complete this report without his sufficient grace

I also thank my respondents for giving me information which has enabled me finish this research report

DEFINITION OF KEY TERMS

Household: A household is defined as a group of people living within one domicile who **commonally** share meals together.

Immunization: A process by which a person becomes protected against a disease through vaccination

Insecticide Treated Mosquito Nets: Nets treated with insecticide to kill or irritate mosquitoes **and** used as physical barriers.

Malaria: A life threatening disease that is caused by Plasmodium parasites.

Transmission: Passing of a pathogen causing communicable disease from an infected host individual or group to a particular individual or group

Prevention: Action taken to decrease the chance of getting a disease or condition

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS: Acquired Immune Deficiency Syndrome

CVI: Content Validity Index

RC: Democratic Republic Of Congo

FHI: Family Health International

HIV: Human Immune Virus

IPT: Intermittent Preventive Therapy

RS: Indoor Residual Spraying

IINS: Insecticide Treated Nets

LINS: Long Lasting Insecticide Treated Nets

MOH: Ministry Of Health

SP: Sulphadoxine Pyrimethamine

SPSS: Statistical Package for the Social Sciences

STIs: Sexually Transmitted Infections

UBOS: Uganda Bureau Of statistics

UDHS: Uganda Demographic and Health Survey

FPA: United Nations Population Fund

HTs: Village Heath Teams

WHO: World Health Organization

ABSTRACT

The study was carried on factors affecting utilization of insecticide treated nets in household's **song** children under five years of age in Kazo town council, Kazo district. It was based on the

owing to find out the socio-economic and cultural factors affecting the utilization of ITNs among children under-five, to identify the institutional factors affecting the utilization of ITNs among children under-five and to establish knowledge of care takers in the utilization of ITNs among children under-five in Kazo Town Council.

Methodology: A cross-sectional research design which was both qualitative and quantitative methods for data collection. Approaches were used. Sample size of 92 respondents was considered which comprised of parents/care takers of under five children and other key informants like, health workers. VHTs and town council health inspector. Information was collected from 92 respondents using questionnaires and interviews. Data was analyzed using SPSS version 21 to generate both descriptive and inferential statistics.

Results: The study findings indicate that significant socio-economic factors affect utilization of ITNs within households and these include; gender of the household head ($p = .017$), age of household head ($p = .005$), level of education; ($p < .001$) religion ($p = .031$), household size ($p = 0.028$), income status ($p = .031$), number of children below 5 ($p = .002$), gender of the child ($p = .026$), age of the child ($p = .001$), presence of fever a month before the survey and sleeping arrangement ($p = .046$). The study also identified significant cultural factors affecting the utilization of ITNs among children under-five years to be; misconceptions about malaria and its prevention ($p = .017$), cultural beliefs ($p = .033$), poor perception and attitude ($p < .001$). The study further identified the institutional factors affecting the utilization of ITNs among children under-five years to be awareness ($p = .011$), access/availability ($p = .012$), poor coverage ($p = .031$), level of financial investment in ITN distribution ($p = .041$) and poor quality nets ($p = .049$).

Conclusion: There are significant socio-economic, cultural and institutional factors affecting utilization of insecticide in Kazo Town Council. The study recommended that plans be made to increase the number of free ITNs distributed to households, increase in community education and public awareness on ITN use.

CHAPTER ONE

Introduction and Background

This chapter was to cover the background to the study, the statement of the problem, the purpose **of the study**, research questions, and significance of the study and scope of the study.

LI introduction

Globally in the year 2015, an estimated 214 million cases of malaria and 438,000 malaria deaths enumerated (Wanzira, 2018). About 91% of these deaths occurred in Africa and from this, e than 70% of all the deaths occurred in children who are less than 5 years old. Despite this, the decline in malaria deaths have also been observed among the under five children whereby _ reduced from 723,000 in 2000 to 306,000 in 2015 (Strachan et al., 2017). Nevertheless, malaria is still a major cause of death in children and it takes the life of a child every two minutes Singlovic *et al*, 2017).

Sc of Insecticide treated nets is among malaria prevention measures used widely in many households (Kateera *et al.*, 2016). Therefore, ownership of an ITN is important in influencing the use of ITNs (Strachan et al., 2017). Due to its central role in malaria prevention, ownership of IINs 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 :T'Js 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, 2014).

In areas where ownership of ITN s 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 (Singh and Rogerson, 2014) 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.

is the third largest contributor of the malaria burden in the world after Democratic Republic of Congo (DRC) and Nigeria (World Health Organization, 2013). Malaria is one of the challenging diseases in Uganda where delayed or complete lack of treatment leads to serious health complications like death (Ministry of Health, 2015). The burden of malaria in Uganda 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 (Ministry of Health, 2015). Also, up to 20% of all hospital admissions and 15% of inpatient deaths are due to malaria (Lengeler, 2017). To prevent malaria related complications, household possession and use of Insecticide Treated mosquito Nets (ITNs) has become a common practice in the country.

Batwala et al., (2012) argued that though government has put much effort to have 90% coverage of ITNs, household ownership has remained seemingly high compared utilization especially among under five children. Malaria continues to be the leading cause of death among these under-fives despite the ITNs intervention to control it. One in four households across the country – least has one 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 (Ministry of Health, 2015). 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., 2018). This is due to unknown socio-economic, cultural and institutional factors. There is still a wide gap between net possession and use in Uganda. Knowing the factors affecting ITNs utilization is essential for to achieve the national targets of ITN use and zeroing down child deaths due to malaria (Batwala et al., 2011).

1.2 Background

In Kazo district and Kazo Town Council in particular, the rate of ITNs utilization among under-5 old children is very low, which is against the national target (Batwala *et al.*, 2011). Though various predictors have been studied in the neighborhood areas, certain socio-demographic, intra household characteristics, cultural and institutional predictors of ITNs utilization to under- 5 year's old children have not been addressed well in Kazo 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.

Malaria prevalence in Kazo in under 5 years is at 20.5% and the general prevalence is 19%. The most affected persons in kazo town council are children under five years and pregnant women,

however, different interventions like health education, distribution of treated nets especially to the pregnant mothers who turn up for immunization as well as malaria testing .

1.3 Statement of the problem.

Globally insecticide treated nets are most powerful malaria control tool to be developed and as they have been an important component of global and national malaria control policies since mid-1990s. Yet up to date utilization is still unacceptably low, only 3% of African children are rently sleeping under ITN and about 20% are sleeping under any kind of net (Oresanya, 2018). In Uganda 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 (Finla, 2017). Utilization of ITNs by under five requires that households' own nets. Whereas programs to ensure children access ITNs have **been** vigorous, utilization rates seem not to be a mirror of ownership rates. Despite the efforts implemented in reducing malaria among under five children such as health education, distribution of treated nets as well as malaria testing in Kazo town council, use of Insecticide Treated Nets among children under five years has remained low compared to household ownership (Wanzira, 2017). This perhaps explains the increasing of malaria cases among the children under five despite the available nets at household level. There is still limited information on the factors explaining low use of ITNs compared to household ownership (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. No study has been done on factors for low utilization in the area. It may not be possible for the country to achieve the national targets of ITN use unless the factors that hinder utilization are identified and appropriate policy solutions found. Therefore, it's from this background that prompting the researcher to establish factors associated with the utilization of ITNs among the under-fives in Kazo Town Council, Kazo District

1.4 Main objective

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

1.4.1. Specific objectives

- i. To** find out the socio-economic and cultural factors affecting the utilization of ITNs among children under-five in Kazo Town Council.
- ii. To** identify the institutional factors affecting the utilization of ITNs among children under-five in Kazo Town Council.
- iii.** To assess the knowledge of care takers on ITNs utilization among children under-five in Kazo Town Council.

1.2 Research questions

- i. What are the socio-economic and cultural factors affecting the utilization of ITNs among children under-five in Kazo Town Council?
- ii. What are institutional factors affecting the utilization of ITNs among children under-five in Kazo Town Council?
- iii. What is the knowledge of care takers in the utilization of ITNs among children under-five in Kazo Town Council?

1.5 Scope of the study

Geographical scope

The study was conducted in Kazo Town council, Kazo District. The township is one of the town councils in Kazo district located in the Ankole Sub-Region of Western Uganda. Coordinates: 00° 03' 10"S 30° 45' 25"E, county: Kazo County, constituency: Kazo county, elevation: 1,300 m

4,300f). 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.

Content scope

The study was limited to factors affecting the utilization as the independent variable and use of ITNs as the dependent variable. The study was specifically aimed at establishing the socioeconomic and cultural factors affecting the utilization of ITNs among children under-five and knowledge of care takers on ITNs utilization among children under-five.

Time Scope

The study was conducted for a period of five months; August 2021 to December 2021.

1.6 Justification of the study

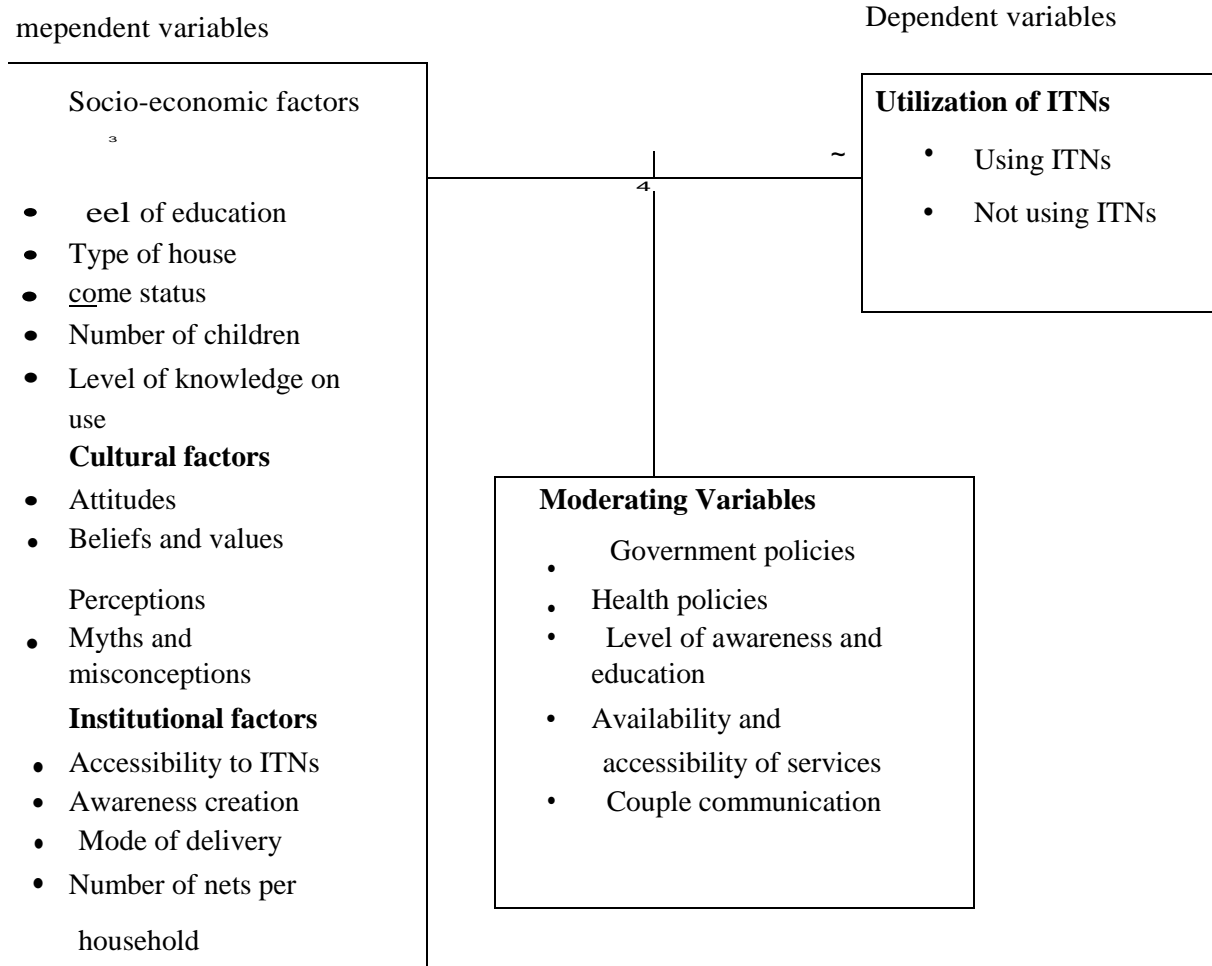
The government of Uganda has made considerable effort in the procurement and distribution of **ITNs** for malaria control. The distribution of ITNs has been strong and consistent but **discrepancy** still exists between ownership and use of mosquito nets. Despite the efforts and vast edge on the importance of use of ITNs, there still exist a major gap in their ownership and utilization. Uganda is not safe from malaria infections and especially for the fact that most of its **Population** live in the malarious areas. A lot of emphasis has been put on ownership but less **mention** has been given to utilization and the factors for low utilization (Ucakacon,2011). There is limited information on the factors that hinder ITN utilization given that a few studies had been conducted to assess the factors. The information that will be generated from this study will assist planners to study the factors and explore ways of increasing utilization of ITNs among children aged under 5 years.

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 the use of ITNs and the challenges involved in the prevention of malaria among children under five years.

The study will be useful to the policy makers, the ministry of health specifically **in** the department of malaria controls. The information obtained may provide useful guide for formulating appropriate policies and programs for the promotion of ITNs.

1.7 Conceptual frame work

The study looked at ITNs use as the dependent variable and factors hindering the use of ITNs as the independent variable. A conceptual model developed below was intended to facilitate the understanding of how factors hinder the use of ITNs at household level.



Narrative.

The illustration above showed the relationship between the dependent and independent variables. It showed the factors that affect the utilization of ITNs as one of the malaria preventive practices. These factors were categorized into socio-economic, cultural and institutional. The utilization of ITNs is hindered by socio-demographic factors like age, sex, education level, occupation, income of the household and marital status, number of household occupants, sleeping arrangements and decision making. Utilization of ITNs is also hindered by cultural factors like, beliefs and values, attitudes, perceptions, myths and misconceptions. The utilization of ITNs is further hindered by institutional factors like accessibility to ITN, level of awareness creation and number of nets per household. Therefore, addressing these limiting factors could lead to increased utilization of ITNs within households and specifically among children under five years.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter focuses on the review of the related literature in line with the study variables. The researcher obtained mainly obtain the theoretical available written data by different authors about the variables under the study.

" History of ITN

In Africa the use of ITNs was scaled up in two steps. In 2005-2008, ITNs distribution focused **the most** vulnerable populations which were women who were pregnant and children under **ears** 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 *dren* 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 (Wanzira *et al.*, 2017).

2.1.1 The Use of ITNs

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 where IRS which was the main strategy for Global Malaria Eradication Campaign led to elimination of malaria in many countries and reduced the malaria burden in others. The use of ITNs led to a decrease in the 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 (Gimnig *et al.*, 2016). On the other hand, **due** to scale up of ITNs and IRS in Africa, malaria illness has reduced and also malaria specific mortality reduced by 42% in 2013.

Insecticide treated nets use reduces malaria transmission in the general population and has been found to be especially effective in pregnant women and children under 5 years of age.

one of the main malaria prevention strategies includes 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 - ethamine (SP) which is part of the antenatal services (Batwala *et al.*, 2011) .

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

There are several determinants of utilization of ITN s at community and household level that have ee identified by various researchers (Ucakacon *et al.*, 2011). They include: age, residence, Population level, and ethnicity, size of the household, number of children less than five years in household, access to information, sex of the household head, wealth and occupation among **riers**. These determinants of ITNs utilization vary due to various reasons and complex factors _ ::rerlinked and related to each other. There is no way of identifying just one or two factors _ **only** affect utilization of insecticide treated nets (Bennett *et al.*, 2012).

-. study by Mazigo *et al.*, (2010) summarized some of the above mentioned factors as follows. **m** his study on determinants of bed net use in Gambia, gender was found to have an influence demand for bed net. Women were found to be more aware of diseases and their prevention. or example when a woman becomes pregnant she is at high risk for malaria and thus has to visit a 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 .them when they become sick.

Graves *et al.*, (2011) found that some reasons given for not using ITNs include discomfort, heat **r** inconvenience, limited perceived benefit or the preference to use other malaria preventive methods. This is supported by a study conducted by Wanzira *et al.*, (2017) where more than onequarter 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 & Rogerson, 2013) found that although possession of a higher education increases the likelihood of possessing ITN s, it was not found to increase utilization.

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

Houses found in rural areas are round shaped, making it difficult to hang a rectangular net.

all nets were said to be convenient in that they can be easily moved from one sleeping space in another (Singlovic *et al.*, 2016).

study by Batwala *et al.*, (2011) observed that the number of young children in a household **ds** determined 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 younger children. This inferred that the less the number of children in the household, the more was likelihood of them sleeping under ITNs.

- a study by Tassew *et al.*, (2017) on determinants of use of 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 ITNs compared to nonmarried caregivers. This was because of their better exposure and experience with child health.

Garcia Garcia-Basteiro *et al.*, (2011) found a positive association between the use of ITN and the age of the child. The older the child, the less was the likelihood 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.

Hetzel *et 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 the pregnant women compared to the 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-Basteiro *et 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 the educated caregivers

ls of wealth index reported increased utilization of ITN among the under five **en**The study found a positive association between religion and ITN utilization. Christians **red** high utilization of ITNs as they were more than three times more likely to put their -five child under ITN compared to Muslims.

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

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

23 Cultural factors affecting the utilization of ITNs among children under-five

n some studies of bed net use conducted by Kateera et al., (2015), the major reasons for not using nets include; difficulty in hanging the net, little space in the house and poor sleeping conditions and positions, negative perceptions about nets such as: that mosquitoes still can bite through the net, dislike for the net among some household members, some households are resistant to malaria or not bothered by mosquitoes. Sleeping under net is uncomfortable and causes heat while sleeping. Sleeping under net can cause suffocation to children. (Singlovic et al., 2016).

Namusoke et al., (2010) in a qualitative study conducted in Busia district reported that non use of ITNs was basically due to; poor sleeping habits for example 'children slept anyhow throwing hands and feet left and right' , hindrance to sexual relations and alcoholism. Offensive habits of men like alcoholism affect proper and consistent use.

In a study conducted by Strachan et al., (2016) in western Kenya found out that, number of mosquito nets, relative wealth, number of household occupants and the education level of the household head had no effect on regular use of ITNs however, excessive heat was often cited

reason for irregular use of ITNs. In the same study, other important reasons for non use were disruption of sleeping arrangements, lack of motivation and technical problems room to hang the net also affects consistency in utilization of an Insecticide Treated Net.

er study conducted by Finlay et al., (2017) in Mukono district reported that over half of the Focus Group Discussions (FGDs) thought that chemicals used to treat the nets were very

ful to adults, children and pregnant women. The study found out that over half of the spondents in all FGDs seemed to believe that treated ITNs can affect pregnant women especially in breathing, causes feeling of excessive heat and suffocation at night (Singh and gerson, 2013).

- ;xent review on community acceptance of bed nets has shown that various factors influence ~ use of bed nets, including cultural, behavioral and demographic factors, ethnicity, accessibility, gender relations and seasonality of malaria (Sena et al., 2013).

Ihe results from the first mortality study of Insecticide Treated Nets in Gambia (Alonso et al _ 091) showed a reduction in deaths from all causes in children under the age of five by 63%. The results of the second study in Gambia confirmed the earlier study results by showing a reduction in mortality of 25% to 38% in children under 9 years of age (Ucakacon et al., 2011). More than 20 studies of ITNs have been conducted in different areas of the world where malaria is endemic. Most studies have documented a reduction in malaria disease rates between 20% and 63% following the introduction of ITNs (Batwala et al, 2011).

A review on community acceptance of mosquito bed nets revealed that various factors such as, cultural, behavioral, demographic, ethnicity, accessibility, gender relations and seasonality of malaria influence the use of mosquito bed nets Many authors have concluded that although ITNs are effective in malaria prevention, local perceptions, acceptance and use of ITNs as well as use of other preventive methods, are invaluable in malaria control programs (Okafor&Odeyemi, 2012).

Perceptions on the use of ITNs and other malaria preventive interventions have been conceptualized based on the Health Belief Model developed by Becker (1974). In this model, two main factors influence the likelihood that a person will adopt a recommended preventive

action. First, a person must feel susceptible and threatened by the disease, with perceived serious consequences. Secondly, the person must believe that the benefits of practicing prevention outweigh the perceived barriers to the preventive action. Therefore, four constructs can be derived from this model: perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Amoran et al., 2012).

Wanzira et al., (2017) in a qualitative study conducted in Busia district reported that non use of ITNs was basically due to; poor sleeping habits for example 'children slept anyhow throwing hands and feet left and right' • hindrance to sexual relations and alcoholism. Offensive habits of men like alcoholism affect proper and consistent use.

2.3 Institutional factors affecting the utilization of ITNs among children under-five .=...:ucation

and awareness creation; several studies have identified a correlation between the level

of knowledge about malaria and utilization of ITNs among under-five children across varied socio-demographic groups (Wanzira et 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 compared to those who do not access education (Amako, 2016).

Adigilign & Kedir, (2012) found that one of the key predictors of ITN use among under five children in Nigeria is the level of knowledge awareness that ITN use prevents malaria. Parents/caregivers who knew about the specific risks of malaria were more likely to make their children sleep under ITNs than those who did not.

Access/availability; evidence from some studies found that the reason for the poor ITN utilization is attributable to difficulty or lack of access to ITN by children's' parents/caregivers. This is because ITNs are given out at health facilities, some of which are far from the mothers/caregivers (Graves et al., 2011) found that despite the fact that the respondents have good knowledge about malaria and its prevention, ITNs are simply not available to them. It is thus evident that a lot of Nigerians especially those in rural areas do not have access to public health facilities either as a result of the long distance between them or lack of well-equipped and manned facilities which affect their utilization of such services. Since malaria prevention services are provided in health facilities, a lot of parents/caregivers will be left out (Appiah-Darkwah & Badu-Nyarko, 2011).

Lack of equality is a major issue in ITN ownership and utilization among under-five children. Net ownership has been found to be lowest among the poorest households; thus possibly linking ownership to the cost of the net. Authors of a study conducted on the effect of lowering tariffs on nets and netting materials predict that reducing tariffs on insecticides and ITNs from 42% to 0% and the tariff on netting materials from 40% to 5% would increase demand for ITNs by 9-27%.

Praves et al., (2011) reported a significant association between good access roads to the community and net ownership.

Steele et al., (2011) in their study argued that despite the government's effort to scale up ITN distribution in Cameroon, full coverage and proper usage was limited by lack of consistent distribution and other issues related to maintenance and replacement of nets, as well as local

beliefs and poor understanding of the relationship between mosquitoes and malaria at the community level. In addition, studies have observed great disparities between ownership versus usage of ITNs due to poor distribution.

Tomah et al., (2012) also in their study argued that despite the widespread roll out of policies, and substantial financial investments in ITN distribution, coverage remains suboptimal in many regions, particularly with respect to pregnant women. Recently published data from sub-Saharan Africa indicate that although 96% of countries surveyed had a policy for ITN coverage, but reported coverage of under-five children with ITNs was only 17%. The main delivery system for ITNs through antenatal clinics (ANCs), using free distribution or a voucher system. This caused those who do not use antenatal clinics (ANCs) or understand the voucher system to be left out.

Shana et al., (2013) showed that the time of the year during which the nets are delivered affects use. 99% of the net recipients were found to use the nets during rainy season, while only 20% used it during the dry season. Utilization varies with seasons of the year and acceptability of the nets in terms of size, color and shape.

Limited coverage; few studies have documented household net coverage and utilization in sub-Saharan Africa. The 2003 National Demographic Health Survey reported a 12% household

ownership of any net and 2% of ITN. Under-five utilization of ITN was 1.2% while 5.9% of women used any net. Net Mark, a United States Agency for International Development (USAID)-funded project, conducted a study in 2004 and compared findings with an older one done by the same organization in 2000 in five states in the country. Overall household ownership of any net

as found to have more than doubled, from 12% in 2000 to 27% in 2004, while ITN ownership *increased* from 0 to 9%. The study also documented an increase in utilization of ITN by under five children compared to previous years to 3.3% (Finlay et al., 2017).

Government and NGOs provide a system of targeted subsidies that focus on vulnerable groups. These comprise the biologically vulnerable (pregnant women, under-fives) and the socio-economically vulnerable for instance the very poor, orphan headed households and displaced

populations (Singlovic et al., 2016). Subsidies are targeted and implemented in such a way that private sector is not undermined but rather supported, wherever possible.

Study done in Bioko Island found that economic boom that took place there had an impact on

ITN use. An economic boom resulted in better housing resulting in increase in sleeping areas. As a result, there weren't enough ITNs to cover new sleeping spaces. Houses where IRS was performed were more likely to own and use ITNs based on couple reasons; people who have access to IRS are more likely to have access to ITNs. The other reason is that if someone is interested enough to have IRS they are more likely to use ITNs in the prevention of malaria

(Garcia-Basteiro et al., 2011)

In most African countries, poor quality nets have been noted as a hindrance to ITNs use among children under-five years. According to the study by Bennett et al., (2012) the negative experiences with nets range from color, material and side effects. Inadequate staff act as a barrier to distributing nets to the households. This shortage

of health care workers was noted in a report Anzira et al., (2017). Shortage of health care workers also affects the time it takes waiting for

Tes.

3.1 Knowledge of care takers in the utilization of ITNs among children under-five

Insecticide treated nets (ITNs) are the mainstay in Malaria prevention. As a vector control intervention, they are effective in preventing malaria morbidity and mortality in a range of epidemiological settings. In reducing densities and infectivity of malaria vectors, they reduce overall transmission and protect all individuals within a community (WHO 2006). Mosquito nets

have been advocated for as the most preventive tools against malaria especially in sub-Saharan Africa (Sena et al., 2013).

....., a study carried out in Mbarara on the perceptions about Malaria prevention ((Sena et al., 2013), avoiding mosquitoes was the most common method mentioned for prevention of malaria.

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 **Citi**-. While most people in this study said ITNs were efficacious both in preventing mosquito

uses 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 7 under mosquito nets but their children die of malaria. Whether mosquito nets work or not remains a myth in the minds of some **people**.

In the above analysis, it seemed to be clear that there are factors within the household which **under** ITN use that needed further investigation. Barriers towards use of bed nets that would **negate** their use include; being expensive, being difficult to keep from holes, being inconvenient – increasing heat and sweating, causing suffocation and that it is impossible to buy a net for everybody in a big family. Some people said that they use bed nets when mosquitoes are abundant but keep them where there are no mosquitoes in the dry season. In

a study carried out in

tarara district, western Uganda, found that mosquitoes were perceived as a cause of malaria **ta** at the same time use of bed nets was low (26 percent). People who did not use bed nets cited discomfort due to heat and humidity; and the high cost of ITNs as reasons for non use (Ezen, – **11**). This therefore accounted for low usage of ITNs.

According to the policy and strategy for ITNs, over 80 percent of people living in malaria endemic areas of Uganda are supposed to sleep under ITN. The majority of these people purchase their ITNs from the unsubsidized commercial market. However, vulnerable groups can **also** subsidized ITNs (UNFPA, 2010). The government of Uganda has put in place programs **to** target the vulnerable groups supplemented by NGOs and the private sector. All this is done ensure that the vulnerable groups especially children under five access and sleep under the **ITNs**. Prices are kept low in the commercial market in both urban and rural areas due to economies of scale as well as competition among ITN suppliers and retailers. Government helps providing enabling environment which includes generic promotion of ITN products as well as supportive fiscal and regulatory environment.

- improve accessibility to ITNs by target population in rural areas, distribution is carried out **mainly** through national health services (Fixed post and outreach mobile team) in Djibouti.

ever, NGOs and Community based association are involved in ITN promotion and .. : :: ... :ibution in the peri-urban and urban areas. In the study conducted in Mukono district about eventing malaria in pregnancy, participants knew that mosquito nets were a useful preventive measure against malaria and that pregnant women and children were supposed to sleep under

us since they are the most vulnerable groups. However the availability and use of nets in this nmunity was found to be very low. Over three quarters of participants in all the FGDs and key ommant interviews reported that very few people in the community use mosquito nets (Sena *et* 2013). This study therefore seeks to establish why utilization is still low specifically among

under fives (FHI, 2015).

couragement to utilization of ITNs as the ways by which children can actively take part in ulization of ITNs (Gosh, 2013) Children play key roles in Knowledge and family planning. icreasing men's participation in the practice of family health has been difficult. In today's new perspectives, men are recognized to play important roles in utilization of ITNs and often

minate decision- making and so can seriously harm or help women's Knowledge (Mulama,

- .5).

cording to Kate *et al*, (2011) it is men who usually decide on the number and variety of sexual relationships, timing and frequency of sexual activity and use of contraceptives, sometimes through coercion and violence. Child bearing is the outcome of a participation of both partners in a conjugal union and men together with women play key roles in Knowladge decision-making including family planning. In fact, most men not only take decisions about ~selves but also often play the dominant roles in decisions crucial to the Knowladge of

omen, especially in developing countries. Childbearing has an impact on men's lives too. For in most socio-economic setup they are the ones who provide for the wife and children financially. Emotionally as well men play crucial role by caring for the health of the child and

_so that of the mother (Ankomah *et al*. 2012).

The evolved focus on couple's participation in utilization of ITNs stems from valid concerns. Firstly, as indicated, women of many cultures seek approval of their husbands to use contraception and do not use if husband, has not agreed to its use. Involving men in matters

elated to Knowledge is an indispensable strategy to contain the incidence and spread of STs, IV and AIDS which are evidences of men's risky sexual behavior. Involving men actively in reproductive decision making will also reduce the incidences of unwanted pregnancies. Encouraging men to use contraception is one of the ways by which men can actively take part in C!!Dily planning. In such a scenario the low use of contraception by men becomes a matter of serious concern (Graves *et al.*, 2011).

study done in Kenya by Graves *et al.*, (2011) found that utilization of ITNs awareness was **high**, but condoms and vasectomy were found to be stigmatized, and utilization of ITNs was considered women's responsibility. Men gave Utilization of ITNs only limited support because they believed that contraceptive usage had an adverse effect on women's sexuality.

Finlay *et al.*, (2017) found that in Egypt 87% of men approved of the use of utilization of ITNs with the level of approval not varying much among men of different age groups or education levels, or between rural and urban residence. 18% of married men surveyed reported having used a male method of contraception in the past, but vasectomy was extremely rare even though 60% of the surveyed men indicated desiring to have no more children.

Garcia-Basteiro *et al.*, (2011) noted that while African men are largely apathetic to family planning, they are not necessarily uninterested. Many African men want to participate more actively in deciding how many children they should have and when to have them, but they lack sufficient information to do so. In some cases, many men do not know about contraceptives. Even those who are aware have little access to such services because utilization of ITNs programmes are designed to serve women (Singlovic *et al.*, 2016). In most African countries, utilization of ITNs services are widely offered in perinatal units of public hospitals where many African men feel uncomfortable visiting. Studies in parts of Africa have shown that there is a strong link between knowledge and use of contraceptives and the level of education as well as economic status; the levels of knowledge and use of contraceptives are lower among the relatively less educated.

Surveys have shown that while children in many cases are informed generally about family planning, they do not have detailed knowledge of the operation and use of converse methods. A reason for the couple's superficial knowledge of contraception lies in the way they obtain information: mainly from mass media and informally from relatives and friends. Radio and

evision are frequently the men's source of information (Wanzira *et al.*, 2017). The mass media's messages on utilization of ITNs are mostly of general nature. This may account for their

ledge which is general and lacks detailed information on methods, which is one of the preconditions for continuous use of modern utilization of ITNs methods. Health workers and utilization of ITNs helps give a comprehensive counseling and explanation of application, **effects** and side effects of the various methods. However health facilities and utilization of ITNs consultations have so far addressed female target groups, men are often excluded from detailed knowledge of the various methods of preventing pregnancy (Appiah-Darkwah & Badu-Nyarko, 2011).

- a study carried out in Eastern Uganda by Ebanyat (2017) on the pattern of birth intervals it as noted that an outstanding reason for non-use of contraception among women who knew about contraception was because husbands did not approve of it. Biadgilign & Kedir, (2012) considering the need to involve men in utilization of ITNs concluded that utilization of ITNs is a **joint** responsibility of both women and men and that they should participate themselves. 25.4% of men in peri-urban areas around Kampala had the knowledge about utilization of ITNs and had at least ever used a method of contraception. Wanzira *et al.*, (2017) noted that men's opposition to utilization of ITNs was not as wide spread as it was popularly believed. Men have a major role in the decision to use utilization of ITNs methods and in determining the number of children a couple should have although they do not encourage women to participate in decision making about family size and share responsibility in women's health. The problem appeared to be lack of communication between children/ partners which if it was available, men's consent for utilization of ITNs use would be favorable. Male knowledge of various utilization of ITNs methods was as high as was approval and ever use of utilization of ITNs and their important factor to prevent frequent and unwanted pregnancies or limit family size for financial reasons. Current usage of utilization of ITNs was low with one man using a permanent method (vasectomy) and the rest used condoms mainly for prevention of STDs especially AIDS other than for fertility regulation.

Children participation in utilization of ITNs is crucial both as clients and in decision-making. Men can play a vital role in supporting their partners to use contraceptives or prevent sexually transmitted diseases by using condoms and sharing decisions on the size of their families

Amako, 2016). Through participation men can help slow the spread of HIV/AIDS and sexually transmitted infections. Participation of men in utilization of ITNs is important both in their willingness to use male methods of contraception and in decision making for contraceptive use their partners.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

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 care takers knowledge **affecting** the utilization of ITNs among under-five children at household level whereas

qualitative methods were used to investigate perceptions, attitudes, beliefs and knowledge on **ITNs** use using Key informant interviews to obtain views and experiences of service providers and community leaders.

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 care takers knowledge affecting the utilization of ITNs among under-five children at household level whereas qualitative methods will be used to investigate perceptions, attitudes, beliefs and knowledge on **ITNs** use using interviews. Key informant interviews will be used to obtain views and experiences of service providers and community leaders.

3.2 Study Area

The study was conducted in Kazo Town council, Kazo District. The majority of the populations

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; Banyoro, Banyarwanda and Bakoonjo. The area was purposively chosen because it is among the areas in Kazo districts where malaria is highly endemic.

3.3 Population of study

An estimated population of 1620 comprised of parents/care takers of under five children and other key informants like, health workers, VHTs and town council health inspector. Parents/care takers were considered because they are directly close to the children. Other categories were be

considered because they are responsible for the distribution of ITNs and assessment of intervention programs.

3.4 Inclusion and Exclusion Criteria

Inclusion:

Household heads with children under five and those who consented to the study.

Exclusion:

Household heads without children under five and those that refused to consent to the study

3.5 Sample Selection and Size

The sample size constituted 320 respondents and this was determined using Cochran's correlation formula as edited by Bartlett et al 2015, as indicated below

$$\frac{N}{1 + Ne^2}$$

here

= Number of the total estimated population

= sample size

$i = 0.05$ level of significance

- = $\frac{1620}{1 +$

$1620 \times 0.0025 =$

$\frac{1620}{5.05}$

a = 320 (Sample size)

From the sample size 200 community members were selected, 50 VHTs as respondents were selected, 60 health workers were selected as well as 20 parish local leaders who were selected.

3.6 Sampling procedure

Kazo Town council was selected because it is one of the areas where free net distribution to under-fives had been done by Ministry of Health since 2008. Therefore all children under five years own nets. The target of the respondents were parents/caregivers in the households. Multistage cluster samplings were used in the selection of 4 wards across the town council. From

each of the selected wards, four villages were selected using simple random sampling to make a total of 16 villages. A sampling frame consisting of households with children under five years in **er** selected villages were constructed with the assistance of the local council chairpersons . . . systematic random sampling was used to select 20 households from each of the selected villages making a total of 50 households. The respondent unit was the parent/caretaker of the children.

Other key informants will be purposively selected based on their positions. In the same way HTs 50, 60 Health Workers, 200 Community members and 20 Parish Local leaders was selected from the total respondents.

3.7 Data collection methods and Tools

The principal investigator administered the research instruments for data collection and managed data.

3.7.1 Tools

Questionnaires and key informant interview guides were properly formulated to cover all the study variables for purposes of data gathering.

3.7.2 Questionnaire survey

A questionnaire was the main method for collecting quantifiable data from parent/caretakers of children under-five. A semi-structure questionnaire with (both closed and open ended questions) were designed, translated to the local language and then were used to collect quantitative data from respondents. This method allowed a selected number of respondents to answer specific study questions in their local languages they understood.

3. 7 .3 Interview guide

A key informant interview guide was used to identify and generate qualitative data on factors affecting utilization of insecticide treated nets in households among children under five years of age in Kazo Town Council, Kazo District. 10 key informants including

3.8 Quality Control Methods

3.8.1 Validity of Instruments

Before administering the questionnaires, they were first examined by colleagues 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;

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

3.8.2 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 produced the same results. In this study, the test-retest method was used to establish the instruments' reliability. In addition; the alternate form reliability method was used.

3.8 Data Analyses

3.8.1 Qualitative Data Analysis

Data from interviews were analyzed through thematic content analysis and identification of concepts. This kind of data was coded and categorized.

3.9.2 Quantitative Data Analysis

Data collected through questionnaire was checked for uniformity, accuracy, consistency, legibility and comprehensibility. It was then coded, cleaned and entered using the excel computer program and later imported to SPSS version 21.0 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 was generated.

3.10 Ethical consideration

The written introductory letter to conduct the study was sought from the University, department of Environmental Health sciences (KABSOM) to Kazo town council where a letter of authorization was obtained. Written informed consent from respondents was sought and their names were not written anywhere on the questionnaires in order to assure them of confidentiality.

3.11 Limitations of the Study

The study was faced with a problem of not finding all respondents in the study area especially the organizations employees who go to field as a group. The researcher however arranged with them to fix for his an appropriate time in order to collect reliable and valid information from them for the study.

The researcher further was faced a problem of some respondents not providing information for the study as information relating to the study variables, however to this, researcher explained to them mat the information was only for the academic purpose while making them to understand the study variables.

The study also was expensive in terms of stationary. However the researcher mobilized funds from friends and family members for the study to be completed successfully in time with the help of his supervisor.

3.1.2 Data management and analysis

Quantitative data from questionnaires was edited, coded and checked for consistency, then entered in SPSS computer software for analysis, discussion and presentation in tables, graphs and pie chart. Content analysis was used to analyze qualitative data. Quotes were transcribed into themes and subthemes that addressed the objectives of the study. The observations made were triangulated with the rest of the data for comprehensiveness and complementation.

3.13 Dissemination of results

The results of this study will be submitted to Kabale University for the partial fulfillment of an award of the Bachelor's degree in Environmental Health Science. Copies of this report will also be given to the Kazo town council and Kazo District local government.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION.

4.0 Introduction

This chapter presents the analysis and interpretation of the study findings. Findings were presented in form of; socio-demographic characteristics, socio-economic, cultural and institutional factors affecting the utilization of ITNs among children under-five in Kazo Town Council. All the respondents the study targeted were accessed and data captured from them

giving a total response rate of 100%.

4.1 Socio-demographic characteristics

The key demographic characteristics examined in this study included; gender, marital status, age, level of education, household size, and number of children under five. The purpose for gathering background information was to help in establishing whether the sample characteristics were similar to those of the population where the sample was got.

Table 2: Socio-demographic and economic characteristics of the respondents (320)

Variable	Classification	Frequency	Percentage
Gender	Male	145	45.3
	Female	175	54.7
Marital status	Married	266	83.1
	Never married	54	16.9
Age bracket	18-29 years	128	40
	30- 40 years	138	43.1
	41 and above	54	16.9
Level of education	None	32	10
	Primary	56	17.5
	Secondary	84	26.3
	Diploma	96	30
	Degree	52	16.3
Descriptive Statistics	Minimum	Maximum	Mean
Houshold size	4	9	5.36
Number of unde five	1	4	2.87

Source: primary data, 2021

sults in table 2 indicate that more than a half (54.7%) of respondents were female and 45.3% male. Married respondents were the majority at 83.1 % whereas 16.9% were unmarried. 43.1 % of respondents were aged 18-29 years, 40% 30- 40 and 16.9% aged 41 years and above. Most the respondents (30%) had diploma, 26.3% secondary education, 17.5% primary, 16.3% degree and 10% had no formal education. On average, majority households comprised of 5 members with a smallest having 4 and a biggest 9. Average number of children under 5 were 2 for most households with a minimum of 1 and a maximum of 4.

4.2 Socio-economic factors affecting the utilization of ITNs among children under-five

Table 3: Socio-economic factors affecting the utilization of ITNs among children under-five in Kazo Town Council

Variable	Values	OR	95% CI.	p-value
Gender of household head	Female	3.008	.649 -4.567	.017
	Male			
Age of household head	18- 29	.958	.460 -1.967	.907
	30- 40	1.960	.470 -3.962	.005
	41 and above	1		
Level of education	None	1.315	.486-3.563	.590
	Primary	.823	.399-1.695	.597
	Secondary	2.051	.985 - 4.270	<.001
	Diploma	.749	.345-1.626	.465
	Degree	1		
Religion	Christian	1.666	.402-2.105	.031
	Muslim	1		
Employment status	Employed	1.008	.649-1.567	.971
	Un-employed	1		

Household size	Members at household	2.954	.593 - 4.536	.028
Ownership	of Yes	.864	.532-1.402	.554
ITNs	No	1		
Income status	High	1.781	475 -2.285	.031
	Low			
Number of children below 5	Less than 3	2.733	.434- 5.238	.002
	Above 3	1		
Gender of child	Boy	1.247	.449 -3.243	.026
	Girl			
Age of the child	Below 2	4.752	.172 - 7.349	.001
	3-5 years			
Season	Yes	.761	471- 1.229	.264
	No	1		
Fever a month before the survey	Yes	1.109	.672-2.830	.005
	No	1		
Type of house	Mad house	.918	.553-1.526	.743
	Concrete house	1		
Sleeping arrangement	Bed	1.426	.884- 2.300	.046
	Floor	1		

Source: primary data, 2021

Dependent variable: Utilization of ITNs (I-using, 0- not using)

- OR> Odds Ratio
- CI» Confidence Interval

The results obtained using the binary logistic model are shown in table 3. The log odds explained the changes in the probabilities of the outcome as a result of a unit change in the explanatory variables. Utilization of ITNs was used as the outcome category in this equation.

Eleven variables were found to be statistically significant and these included; gender of the ousehold head, age of household head, level of education, religion, household size, income status, number of children below 5, gender of the child, age of the child, presence of fever a ::mnth before the survey and sleeping arrangement.

Gender of the household head increased the log of the probability of using ITN by 3 and was statistically significant at 0.05 levels. This means that households headed by female heads were 3 times more likely to have children sleep under ITN compared to those households headed by males. This was found to be statistically significant [OR = 3.008 ;(95% CI: .649 - 4.567) $p = .017$].

Similarly age bracket of the household head increased the log of the probability of using an ITN by 1.960. Guardians/parents aged 30--40 were 1.9 times more likely to ensure that children slept under an ITN as compared to those aged 18- 29 and 41 and above [OR at 95% CI = 1.960; 95% CI: .470 -3.962; $p = .005$]. However, there was no significant difference in making sure a child sleeps under an ITN between those aged 18-29 and those above 41 years.

Education level of the care taker increased the log of the probability of using ITN by 2 and was statistically significant at 0.05 level. Care takers with secondary level of education were 2 times likely to ensure that a child slept under an ITN as compared to those who had never attended school and those with other educational levels. This was found to be statistically significant [OR = 2.051 ;(95% CI: .985 - 4.270): $p < .001$]. Results indicate that there was no significant difference in ensuring that a child sleeps under ITNs for those who without formal education, those with primary, diploma and those with university degrees.

Regarding religion affiliation, Christians were 1.66 times likely to ensure that a child sleeps under an ITN as compared to Muslims and this be significant [OR = 1.666; (95% CI: .402 - 2.105); $p = .031$]. However, there was no significant difference in use of ITNs by other religions.

Household size increased the log of the probability of using an ITN by 2.954 and it was statistically significant at 0.05 level. The average number of members in a household in the sample was 5. This meant that households with 5 or less members are 2.954 times more likely to ensure that children below five years of age sleep under an ITN as compared to those household with more than five members[OR = 2.954; (95% CI: .593 -4.536); $p = .028$].

the status of the household head increased the probability of using an ITN by 1.781 times - meaning that household heads with a high-income status were 1.781 times likely to put a child under an ITN while sleeping than household heads from low income status. This was significant

[OR= 1.781; (95% CI: 1.475 -2.285); p = .031].

The number of children at household increased the probability of using an ITN by 2.7 and it was statistically significant at 0.05 level. A household with less than three children under 5 had 2.7 chances of ensuring that children below three sleep under an ITN as compared to household with

children above three .. This was significant at [OR= 2.733; (95% CI: 1.434- 5.238) p = .002].

Having a boy increased the log of probability of using ITN by 1.2 and was statistically significant at 0.05 level. This means that having a boy child at a house was 1.2 times likely to increase the use of ITNs as compared to having girl child. This was significant at [OR= 1.247; (95% CI: 1.0449

1.026; p = .026].

The analysis further showed that it was 4.7 times more likely for a child under-2 years to sleep under an ITN compared to children between 3-5 years. This was significant at [OR = 4.752;

95% CI: 1.172-7.349; p= .001].

Presence of fever in a child a month before the survey increased the log of the probability of using an ITN by 1.1 compared to those who never experienced fever a month prior to the survey. Presence of fever a month before the survey was statistically significant at 0.05 level. This means that in households where a child had experienced fever before, the guardians in these households were 1.1 times more likely to make sure their children slept under an ITN as compared to those children who never experienced any fever episode before [OR = 1.109; (95% CI: 0.672-2.830; p = .005].

Sleeping arrangement had an effect on use of ITNs and this increased the log of probability of using an ITN by 1.4 and is statistically significant at 0.05 level. This means that household with children who slept on a floor were 1.4 times less likely to use ITNs compared to those who slept on beds. This was significant at [OR= 1.426; (95% CI: 0.884 - 2.300; p = .046].

In this case the earlier stated null hypothesis that there was no statistically significant relationship between specific socio-economic factors and the utilization of ITNs among children under-five

Town Council was rejected. In an interview with one of the health workers, she had this

... although government has distributed free ITNs, having an under five child sleep under a net remains a challenge to majority of the households in this area. No one is to blame but the economic situations most households face including poverty and sleeping arrangements".

Interview with one of the caretakers, she revealed;

... it is my wish to see my children sleep under an ITN but it's unfortunate that I lack knowledge on how to use the net. I have never been to school and therefore do not know English which makes the instructions for using a net much challenging to me'.

cultural factors affecting the utilization of ITNs among children under-five

4 Cultural factors affecting the utilization of ITNs among children under-five in Kazo To

eil

Variable	Values	OR	95% CI.	p-value
Misconceptions about malaria and its prevention	Yes	3.453	142-5.122	.017
	No	1		
Cultural beliefs	Yes	2.175	456-7.372	.033
	No	1		
Ethnicity	Yes	.424	.090- 6.014	.598
	No	1		
Cultural values	Yes	1.222	422 -3.543	.971
	No	1		
Perceptions and attitude	Yes	4.310	.084-8.746	<.001
	No	1		

Source: primary data, 2021

±pendent variable: Utilization of ITNs (1-using, 0- not using)

- OR» Odds Ratio
- CI» Confidence Interval

Figure 1 presents the logistic regression analysis of the cultural factors hindering the use of ITNs among children under-five in Kazo Town Council. The log odds explain the probabilities of the outcome as a result of a unit change in the explanatory variables. Of the five variables hypothesized, only three were found to be statistically significant: misconceptions about malaria and its prevention, cultural beliefs of the household, and knowledge and attitude of the care taker.

Households with positive misconceptions about malaria and its prevention increased the log of the probability of using ITN by 3 and was statistically significant at 0.05 level. This means that a household with misconceptions about malaria and its prevention was 3 times less likely to have children use ITN compared to those households with positive misconceptions. This was found to be statistically significant [OR= 3.453 ;(95% CI: .142 - 5.122); p =.017].

Household beliefs of the household/community increased the log of the probability of using an ITN by 2.2 times and was statistically significant at 0.05 level. Households with deep-rooted beliefs were 2.2 times less likely to ensure that their child sleeps under an ITN compared to households with normal beliefs [OR at 95% CI: 1.175; 95%CI 0.456-7.372;p= .033].

Knowledge and attitude of the care taker increased the log of the probability of using ITN by 4 and was statistically significant at 0.05 level. This implied that the more the parent/care taker perceived making a child to sleep under ITN as bad, the lesser they were likely to make the child sleep under ITN. This was found to be statistically significant [OR = 4.310 (95% CI: 1.175 - 8.746); p< .001].

In this case, the earlier stated null hypothesis that there was no statistically significant relationship between specific cultural factors and the utilization of ITNs among children under-five in Kazo Town Council was rejected. In an interview with one of the VHTs, she revealed;

'..... culture is one of the most critical hindrances in the implementation any government health cause in this area. As a result deep rooted cultural beliefs, poor perceptions and attitude, using ITNs is very difficult because locals believe they are against culture. They instead opt for traditional methods in the control of malaria because they believe these methods are more effective than nets".

Institutional factors affecting the utilization of ITNs among children under-five

Table 5: Institutional factors affecting the utilization of ITNs among children under-five in o Town Council

Variable	Values	OR	95% CI.	p-value
Limited awareness creation	Yes	4.508	.348-9.587	.011
	No	1		
Access/availability	Yes	3.140	1.009- 6.776	.012
	No	1		
Lack of consistent distribution and replacement of nets	Yes	1.259	.052- 30.427	.887
	No	1		
Poor/limited coverage	Yes	2.761	.302 - 4.105	.031
	No	1		
Level of financial investment in ITN distribution	Yes	2.027	.402 -6.133	.041
	No	1		
Poor health policies	Yes	.564	.112- 2.842	.487
	No	1		
Poor ITNs delivery systems	Yes	.864	.532-1.402	.554
	No	1		
Poor quality nets	Yes	1.222	.422 -3.543	.049
	No	1		
Shortage of health care workers	Ye	1.424	.090- 5.014	.598
	No	1		

Source: primary data, 2021

Dependent variable: Utilization of ITNs (1-using, 0- not using)

- OR» Odds Ratio

CI » Confidence Interval

Regression output for the institutional factors hindering the utilization of ITNs among under-five in Kazo Town Council were presented in the table 4 above. Of the nine (9) identified factors, only five (5) remained significant at 0.05 level of significance and these

included awareness creation, access/availability of ITN, limited coverage, level of investments in ITN distribution and poor quality ITN.

Awareness creation reduced the log of the probability of using ITN by 4 and was significant at 0.05 level. This means that more the household/community was less ITNs, reduced the chances of making an under five child sleep under an ITN by 4 S: (95% CI: .348-9.587): $p = .011$].

Availability of ITN increased the log of the probability of using an ITN by 3.14. This ~ the more ITN was available and accessible, increased the chances of making an child sleep under a net by 3.4 chances [OR at 95% CI = 3.140; 95% CI: 1.009 012].

Coverage decreased the log of the probability of using ITN by 2.7 and was statistically at 0.05 level. This implied that a smaller ITN coverage was 2.7 times more likely to assure that a child slept under an ITN at household. This was found to be . significant [OR= 2.761; (95% CI: .302 -4.105); $p = .031$].

Financial investments in ITN distribution decreased the log of the probability of using ~ 2.027 and it was statistically significant at 0.05 level. This means the more the investments in ITN distribution was little, the less the coverage hence lowering the

ttat under five children sleeps under ITN[OR = 2.027; (95% CI: .402 - 6.133); p =

ty nets decreased the probability of using an ITN by 1.2 chances implying that heads with poor quality nets were 1.2 times less likely to put a child under an ITN household with quality nets.

This was significant at [OR = 1.222; (95% CI: .422 - 3.649)].

er stated null hypothesis that there was no statistically significant relationship between ific institutional factors and the utilization of ITNs among children under-five in Kazo .:ncil was in this case rejected. In an interview with a town council health inspector, he

..... people in this area are ready and interested in making their under five children use ITNs but the challenge we have still relates to low coverage, poor sensitization and s, poor quality nets which originates from limited government investment and at times ,bezzlement of investment funds by top procurement and distribution officials".

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

After discussing the findings of the study, conclusions were drawn and recommendations were made based on the study findings. The section further provided the areas that are suggested for further

The factors discussed were arranged in line with the study objectives that included; socio-cultural and institutional factors affecting the utilization of ITNs among children in Kazo Town Council.

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

The study identified significant socio-economic factors that were associated with ITN utilization among children under five years of age in Kazo town council. These included; gender of the household head, age of household head, level of education, religion, household size, income, number of children below 5, gender of the child, age of the child, presence of fever before the survey and sleeping arrangement. These were the determinants that remained significant even after adjusting all the predictor variables for any confounding factors. These are comparable to other studies done previously especially in low and middle income countries (LMIC) as discussed below.

Gender of the household head had a significant influence on having children under five sleep under ITN. Female household heads were more likely to put a child below five years under a bed net than male household heads. One of the explanations for this is that women are better in carrying out domestic chores including health-related activities; particularly related ones such as use of ITN and administration of medicines as compared to males. It is not surprising that the probability of an under-5 child to sleep under a bed net in households where a woman is the head is higher than those with males headed households.

These findings were reported by Strachan *et al.*, (2016) who reported female led households more likely to use ITNs.

Similarly age bracket of the household head increased the log of the probability of using an ITN at the household. Care takers aged 30- 40 were more likely to ensure that a child sleeps under an ITN compared to other age groups. Relatively older household heads seem to use ITNs more than younger household heads. This could be associated with more exposure to awareness, education during ANC visits, and perhaps exposure to media, internet and frequent use of health facilities by the more experienced mothers. This experience potentially increases the probability of being informed about the ITN program of receiving ITNs, and the importance of using ITNs for prevention of malaria in children below five years of age. This result is in agreement with a study by Ucaakon *et al.*, (2011) which found that the younger caregivers of children under five years of age, the higher was the level of ITN utilization. These results however disagree with findings from other studies which found negative association between age of the respondent and ITN utilization. The reason for the differences could be as a result of study locations and also

because of the large sample size used in the present study.

Education level of the care taker increased the probability of using ITN by 2 and was statistically significant at 0.05 level. Care takers/parents who had secondary level of education were more likely to ensure that a child slept under an ITN as compared to those who had never attended school and those with other educational levels. This agrees with a study that was conducted by Wanzira *et al.*, (2017) to assess the utilization of ITN among under five children in Uganda. He found that education was positively associated with ITN use. The results of the present study also agree with a study by Tassew and Hopkins (2017), which found a positive association between education and ITN utilization. The level of education is an important factor in disease prevention

since it determines the level of knowledge acquired.

Respondent's religion was found to be a statistically significant predictor of ITN utilization. Christians were 1.66 times likely to ensure that a child sleeps under an ITN as compared to Muslims. This could be that Muslims form of religion represented a smaller group of people in the region where data was collected. These results agree with a study by Strachan *et al.*, (2016) which found a positive association between religion and ITN utilization. Christians were found

to have higher levels of ITN utilization compared to the Muslims.

The study found a positive association between house hold size and utilization of ITN. Household size increased the probability of using an ITN by 2.954. The average number of

•
bers in a household in the sample was 5. This shows that the smaller the household the more utilization of ITN. This can be explained by an interaction of many factors to include the cation of the caregivers, income, knowledge and attitudes.

ome status of the household head increased the probability of using an ITN by 1.781 chances. is implied that household heads with a high income status were 1.781 times likely to put a ld under an ITN while sleeping than household heads from low income status. This study ding is in agreement with Humphrey & Mazigo (2010) who found a positive relationship

een income and use of ITNs in Nigeria. Under five children from families that were nomically stable were more likely to sleep under ITNs than children from poor households. ese findings were also supported by Tassew and Deressa, (2017) who found a relationship een use of ITNs and income in Ethiopia.

e number of children under the age of five years in the household was significantly associated th ITN utilization. The fewer the number of children under the age of five years the more was likely hood of them sleeping under an ITN the previous night before the survey. This result is agreement with a previous study by Tassew and Deressa, (2017) who found out that the fewer number of children under the age of five years the more was the likely hood of them sleeping der an ITN. This was because the parents are more likely to participate in malaria prevention tivities than those with older or fewer children.

e age of the child was a significant predictor of ITN utilization among children under five ars of age. The present study showed that the older the child the less was the likelihood that

child slept under ITN before the survey. This can be explained by the fact that as children ow older, their immune system improves and they experience fewer episodes of malaria and is could lead to their low levels of utilization of ITN. Also in most households, priority for use

ITN is given to the very young children and the pregnant mothers. This agrees with findings · Garcia Garcia-Basteiro et al., (2011) who found a positive association between the use of ITN d the age of the child. The older the child, the less was the likelihood of him/her sleeping der an ITN. This was related to less availability of insecticide treated nets whereby priority as given to younger children compared to the older ones. Another explanation was that as the

ildren grew older, the caregivers assumed they were less likely to suffer from malaria due to proved immunity against the disease thus this led to less utilization of the treated nets.

ce of fever in a child a month before the study increased the probability of using an ITN for five children by 1.1 chances compared to those with no malaria experience. An increased awareness of risk brought about by being sick may translate into better compliance with malaria protection. This could be explained by the consequences which come along with getting an ITN which could include hospitalization cost or even death in case of malaria. Similar findings were reported by Singh and Rogerson, (2013) who showed that

- episodes of fever in a child was a significant determinant of use of ITNs by children

arrangement increased the probability of using an ITN by 1.4 chances and is highly significant at 0.05 level. Households who had children sleeping on the floor were 1.4 times more likely to use ITNs compared to those sleeping on beds. This is because a floor has no space for holding a net as compared to a bed. This finding can be compared to findings by *al.*, (2012) who 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 the rural areas despite the fact that the rural areas had higher ownership of ITNs. This study showed that increased ownership of ITNs did not lead to an increase in ITN utilization.

Cultural factors affecting the utilization of ITNs among children under-five years

Study identified significant cultural factors affecting the utilization of ITNs among children under five years in Kato town council. These included; misconceptions about malaria and its prevention, cultural beliefs, poor perception and attitude.

Misconceptions about malaria and its prevention increased the log of the probability of using ITNs. Households with negative misconceptions about malaria and its prevention were less likely to have children sleep under ITN even though they may have one. This finding is in line with Singlovic et al., (2016) who identified the misconceptions that reduced the likelihood of making an under five child sleep under ITN as; perceiving malaria as ordinary caused by over-work, sunlight, excessive sex, noise, witchcraft, not resting/sleeping well, 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. (Namusoke et al., argued that identifying such misconceptions for the purpose of designing appropriate

- interventions could significantly lead to improvement in health-seeking behavior and

cultural beliefs of the household/community increased the log of the **of** making a child sleep under ITN by 2.175 chances. For example beliefs that protected by God and therefore they are not at risk of getting malaria were found to ~~te~~ utilization of ITN in community. More so respondents believed that chemicals used nets were very harmful to children and pregnant mothers. This finding is similar to **by** Batwala et al., (2011) who also discovered that cultural beliefs affected ITNs use dren under five. In their study, respondents believed that chemicals used to treat the ery harmful to adults, children and pregnant women. They believed that all nets are
∴ a chemical which affect pregnant women, especially their breathing and that if the ould kill mosquitoes instantly, they were also capable of killing people.

ception and attitude of the care taker increased the log of the probability of using ITN es. It was established that parent/care takers who perceived making a child to sleep ~ bad were likely to use ITN. In addition the perceptions that the chemical used to **tave** dangerous effects on pregnancy and the newborn child contributed to low usage ere were some doubts about the bed net efficacy in preventing malaria. Participants that some households sleep under mosquito nets but their children still die of malaria. squito nets worked or not remained a myth in the minds of some people. This study ∴ conformity with finding by Wanzira et al., (2017) in a study carried out in Mbarara reptions about Malaria prevention where by avoiding mosquitoes was the most od mentioned for prevention of malaria and not ITNs.

tional factors affecting the utilization of ITNs among children under-five in

identified significant institutional factors affecting the utilization of ITNs among under-five years in Kazo town council. These included; limited awareness, bility, poor/limited coverage, level of financial investment in ITN distribution and nets.

areness increased the log of the probability of making a child below five years sleep by 4. The more the household was unaware about ITN benefits in the prevention of

ria, reduced the chances of making a child sleep under a net. Parents/caregivers who knew

iv. the specific risks of malaria made their children sleep under ITNs than those who did not. finding is comparable to findings by Wanzira et al., (2017) who also established a relation between the level of awareness about malaria and utilization of ITNs among underchildren. In their study, parents who generally received health education including education on malaria prevention and control during antenatal care visits to health facilities their children sleep under ITNs compared to those who do not access education.

Additionally, availability of ITN increased the log of the probability of using an ITN by 3.14. The study discovered that the more ITN was available and accessible to the households/community, the more the chances of making a child under five to sleep under a net by 3.4 chances. This finding is in support of Graves et al., (2011) who revealed that poor ITN utilization is attributable to difficulty or lack of access to ITN by children's' parents/caregivers. This is because ITNs are given out at health facilities, some of which are far from the parents/caregivers. They further argued that despite the fact that the community having good knowledge about malaria and its prevention, ITNs are simply not available to them.

There was also a significant association between financial investment in ITN distribution and ITN use for under-five children. It was discovered that the lower the financial investment in ITN distribution, the fewer the number of nets distributed to the household hence lowering the chances of a child sleeping under a net. This finding is comparable to Ankomah et al., (2012) who in their study that despite the widespread roll out of policies, and substantial financial investments in distribution, coverage remains suboptimal in many regions, particularly with respect to women. Recently published data from sub-Saharan Africa found that although 96% of countries surveyed had a policy for ITN coverage, but reported coverage of under-five children ITNs was only 17%. The main delivery system for ITNs was through antenatal clinics (ANCs), using free distribution or a voucher system. This caused those who do not use antenatal (ANCs) or understand the voucher system to be left out.

Quality of ITN nets distributed presented a significant association with ITN use. Households with poor quality nets to be of poor quality were 1.2 times less likely to place a child under an ITN compared to household with good quality nets. This is because most communities look at free distributed goods to be of poor quality. In addition, the negative experiences

range from color, material and side effects. This finding is in agreement with *Bennett* who stated that in most African countries, poor quality nets have been noted as a **to** ITNs use among children under-five years. According to them, the negative es with nets included color, material and side effects. Inadequate staff acts as a barrier

∴e findings, the study made the following conclusions, the study concluded that there ...3cant socio-economic factors that hindered utilization of ITNs within households with telow five years of age and these included; gender of the household head, age of . head, level of education, religion, household size, income status, number of children gender of the child, age of **the** child, presence of fever a month before the survey and rangement.

also identified significant cultural factors affecting the utilization of ITNs among under-five years in Kazo town council such as; misconceptions about malaria and its cultural beliefs, poor perception and attitude.

further identified limited awareness, access/availability, poor coverage, level of nvestment in ITN distribution and poor quality nets as the critical institutional factors

◆ utilization of ITNs among children under-five years in Kazo town council.

endations

study points out that expectant mothers and children under five years of age were the **es** of the free distribution of ITNs, plans should be made to increase the number of distributed to households.

change strategy through behavior change campaigns at the community level should be -:-Yide a platform for both the health care workers to learn about the perceptions of in order to get to know them better and also to use that opportunity to educate how to properly use ITNs and their importance in malaria prevention among the

f fever was found to have an impact on use of ITNs. Therefore more community *is* needed to increase the utilization of ITNs so as to avoid the misconception that

ITNs when they are sick. Increasing awareness of the risk brought by one being sick could result in better compliance with malaria prevention.

Community education is needed to increase the utilization of ITNs so as to avoid the **n** that children use ITNs only when they are sick.

One finding of this study which needs to be addressed is the effect of gender of both **d** head and child on use of ITNs. Given results revealed that being a boy child chances of sleeping under an ITN, it is important to highlight the importance of **for** all children without discrimination by sex and all guardians and household heads,

male, young and old should be enlightened on the benefits of using an ITN.

Low level of caregivers should be boosted. Utilization of ITNs among the households under five years still remains a big challenge because of the economic status of That's why caregivers cannot afford beds for all the children in their different age separate beddings for visitors that lead to disruption of sleeping arrangements. If **are** empowered economically, then they can afford such facilities in their homes.

through the Ministry of Health, should intensify continuous distribution of free nets **ing** frequent mass distribution campaigns in the area.

Ministry of Health should increase regular community sensitization campaigns to ensure awareness of the importance of sleeping under insecticide treated nets among the groups. A study to assess the impact of utilization of ITNs with regard to health should be undertaken.

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Recommendations for further research

It is suggested that a further research should be conducted on; knowledge, attitude and on use of ITNs among children under five.

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APPENDICES

I: Consent Form

I am Tumwebaze Rodgers, a third year student from Kabale University, School of
(KABSOM) doing a bachelor's degree in Environmental Health Science. I am **a** study on
"factors affecting utilization of insecticide treated nets in households with **nder** five years of age
in Kazo town council, Kazo district. The purpose of this study ~ demic and information provided
will be treated with utmost confidentiality; no part or

the provided information will be published to the general public. However the full be shared
with the Ministry of Health and the district health department for the [improving proper use of
Insecticide treated nets

will be beneficial to you and other community members because the report will be guiding
innervations to improve on the proper use of Insecticide treated nets in with children under the
age of 5 years

request you to answer these questions with honesty and to the best of your knowledge The
interview will not take more than 30 minute of your time. Your participation in voluntary, feel
free to tell me if you need a rest or if you need to ask me anything.

risks to you in this study and your names or anything that can be used to identify, t be
recorded. You are also free not to answer any question which you are not with

any question? Yes No

teed to interview you? Yes..... No

ticipate

umb print of the respondent..... Date

nterviewer.Date

Thank you for participating in this study

•

Appendix II: Questionnaire for Respondents N

A: General information

b). Female

b) 30-40

c) 41 and above LJ

::mried LJ b) Married level of

education

"rionLJ b) Primary c) Secondary LJ d) Diploma LJ e) Degree us affiliation

b)Muslim LJ

..our source of income?

b) Salary LJ

ssmess] @onset]

B: Intra-household dynamics and utilization of nets ..d

of house structure do you stay in?

..ched/made of mad

b) Semi-permanent LJ c) Permanent LJ

:::y rooms does your house have?

S • 1

c) 6 and above

ny people sleep in this household?

.....

-.: children under five years are in this household? _

iliey related to you?

b) Niece/Nephew teping

c) Siblings

arrangements do you have in place? :::nder

five sleep alone LJ

children *sleep* with parents

parents *sleep* alone

children under five years with *older siblings*

Do you have beds for all household under 5 occupants?

b) No

no, whom do they *sleep* with?

b) *Elder siblings*

you *know* anything about mosquito nets? b)

c) Others

No

es, what do you know?

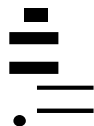
.....

.....

.....

kind of mosquito nets do you know? **CJ**

cide Treated mosquito nets



:::ated and untreated *mosquito* nets **CJ**



.....

_ have any mosquito nets in your house?

b) No **CJ**

::: *Jsquito* net do you *sleep* under? **e**

treated mosquito net **CJ**

r nets

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 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 C: Socio-economic factors affecting the utilization of ITNs among children under-five in Kazo Town Council

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

- a) Yes b) No

26. **If** yes, mention some of these factors?

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. If no, justify your answer?

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CTION D: Cultural factors affecting the utilization of ITNs among children under-five Kazo Town Council

Could there be any cultural factors affecting the utilization of ITNs among children underein Kazo Town Council?

Ye
s b) No

If yes, mention some of these factors?

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If no, justify your answer?

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CTION E: Care takers knowledge in utilization of ITNs among children under-five in

. Could there be any care takers knowledge in the utilization of ITNs among children undere in Kazo
Town Council?

b)No

. **If** yes, mention care takers knowledge?

. **If** no, justify your answer?

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. Any last remarks?

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Thank you for your time