

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**COLLEGE OF HEALTH SCIENCES**

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**DEPARTMENT OF NURSING**

**DIPLOMA PROGRAMMES**



**KNOWLEDGE, PERCEPTION AND ATTITUDE TOWARDS ITNS IN THE  
CONTROL OF MALARIA AMONG STUDENTS OF HOLY FAMILY NURSING AND  
MIDWIFERY TRAINING COLLEGE, BEREKUM**

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### DECLARATION

We hereby declare that this submission is our own work towards the Diploma in General Nursing/Midwifery and that, to the best of our knowledge, it contains no material previously published by another person nor material which has been accepted for the award of diploma of the University, except where due acknowledgement has been made in the text.

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## **ABSTRACT**

The aim of this study was to explore the knowledge, perception and attitude towards ITNs in the control of malaria among students of Holy Family Nursing and Midwifery Training College, Berekum. A descriptive study design was used. Simple random sampling technique was adopted to select 100 study participants for the study. Data collection was done through the use of structured and semi structured questionnaires consisting of both closed ended and open-ended questions. Analysis was done using the computer software Microsoft Excel. The study found that over half (53.4%) of the respondents indicated radio as their source of information about ITNs followed by health facility (25.3%), television (13.4%), and internet (7.9%). Almost all (94.1%) of them knew that insecticide treated nets are supposed to be retreated after some time. Almost all (96.8%) of the respondents agreed that ITNs are the best way of preventing malaria. The study recommended that the government should education talks on the benefits of sleeping under an insecticide treated nets over fears such as suffocation and perceptions that the net is too hot. The health care teams in different communities should be empowered to give door to door education on utilization of insecticide treated nets in the prevention of malaria. They should physically visit the households and check the state of ITNs and advise them accordingly. The study concluded that participants had good level of knowledge regarding ITNs. They also showed good attitude and perception towards utilization of ITNs in the prevention of malaria.

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## **ABBREVIATION**

GHS	Ghana Health Service
ITNs	Insecticide Treated Nets
RBM	Roll Back Malaria Partnership
WHO	World Health Organization
RCH	Reproductive Child Health

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# CHAPTER ONE

## INTRODUCTION

### 1.0 Background of the study

Malaria poses a public health challenge in endemic African countries (World Health Organization, 2020). In 2019, there were an estimated 229 million cases of malaria worldwide. The estimated number of malaria deaths stood at 409 000 in 2019. Children aged under 5 years are the most vulnerable group affected by malaria; in 2019, they accounted for 67% (274 000) of all malaria deaths worldwide (World Health Organization, 2020). According to the World Malaria Report in 2020, the proportion of cases of *Plasmodium vivax* reduced from about 7% in 2000 to 3% in 2019 (World Health Organization, 2020).

Malaria case incidence (i.e. cases per 1000 population at risk) reduced from 80 in 2000 to 58 in 2015 and 57 in 2019 globally. Between 2000 and 2015, global malaria case incidence declined by 27%, and between 2015 and 2019 it declined by less than 2%, indicating a slowing of the rate of decline since 2015 (World Health Organization, 2020).

Globally, malaria deaths have reduced steadily over the period 2000–2019, from 736 000 in 2000 to 409 000 in 2019. The percentage of total malaria deaths among children aged under 5 years was 84% in 2000 and 67% in 2019. The global estimate of deaths in 2015, the GTS baseline, was about 453 000 (World Health Organization, 2020).

Data from the World Malaria Report 2018 provide reasons for optimism as well as concern. Due to enormous investments in malaria prevention, the report highlights a substantial decline in incidence globally between 2000 and 2017 (WHO, World malaria report, 2018). Yet, malaria continues to be the leading parasitic cause of death worldwide, with 445,000 deaths from malaria worldwide in 2016 (WHO, World malaria report, 2018). In some parts of the world,

malaria incidence is also increasing; notably, malaria infections have increased in number in the two most recent years of data (2015 and 2016) (WHO, World malaria report, 2018). India is also the only country outside of sub-Saharan Africa to be included among the 15 countries where 80% of malaria deaths occurred globally (WHO, World malaria report, 2018). Twenty-nine countries accounted for 95% of malaria cases globally. Nigeria (27%), the Democratic Republic of the Congo (12%), Uganda (5%), Mozambique (4%) and Niger (3%) accounted for about 51% of all cases globally. The World Health Organization (WHO) African Region, with an estimated 215 million cases in 2019, accounted for about 94% of cases (WHO, 2020).

According to the WHO (2018), malaria is no longer the leading cause of death among children in sub-Saharan Africa. Since 2000, deaths resulting from malaria has decreased by 66%, translating into a little over six million lives saved, with the majority of them being children (WHO, 2018). The most powerful tool in achieving this success has been the use of insecticide-treated net (ITN), which is widely known to provide protection from malaria-carrying mosquitoes (WHO, 2020).

More than one billion insecticide-treated nets were distributed in malaria-endemic countries between the years 2000 and 2017 (WHO, 2018). World Health Organization declared that “the rapid scale-up of insecticide-treated nets has been by far the largest contributor to the impressive drops in the incidence of malaria, highlighting their effectiveness in reducing or interrupting malaria transmission when there are high population coverage and usage (WHO, 2018). Ghana, has also established policy guidelines for the implementation and scaling-up the use of ITNs in accordance with the Roll Back Malaria Partnership (RBM) programme and has developed a strategic framework to guide its implementation (Ghana Health Service, Malaria report, 2019). Accordingly, the malaria prevention programme in Ghana was expected to

reduce malaria specific morbidity and mortality by 50% by the year 2010 (Ghana Health Service, 2019).

Factors such as the knowledge level of the people about ITNs, environmental and socio-cultural factors (such as perceptions and beliefs about causes of malaria, perceptions about the use of ITNs and family size), as well as sleeping arrangements, may facilitate participation or nonparticipation in ITN campaigns (Adongo, Kirkwood, & Kendall, 2018).

A study conducted in Shai-Osudoku District in the Greater Accra Region of Ghana reported that participants were familiar with LLINs and the issues concerning the end of their useful life. However, the application of this knowledge was deficient. The study concluded that policies and strategies to position LLIN use as the leading resource for malaria control need to be innovative to accommodate the perceptions and practices of targeted households (Opoku, Amoah, & Nyamekye). A study in Hohoe, Ghana reported that almost all the mothers/caregivers have heard about ITN in the municipality. Majority, 52.9% heard about ITN from the RCH clinic; other information sources include: the ANC clinic (33.6%), community gathering (durbar) (8.6%), Radio (3.8%) and Television (1.1%). The study concluded that behavior change communication strategies on ITN use may need to be further targeted to ensure full use of available ITNs (Nyavor, et al., Assessing the ownership, usage and knowledge of Insecticide Treated Nets (ITNs) in Malaria Prevention in the Hohoe Municipality, Ghana, 2019).

A study conducted in the Ho Municipality found that majority (90.8%) of the respondents indicated that ITN is key in the prevention of Malaria. Some respondents (20, 7.1%) also indicated that for the ITN to be effective, it has to be air dried frequently. Majority (80.6%) owned ITNs and 41.7% of them slept under the ITNs with their children the night before the survey (Konlan, et al., 2019).

A study conducted by Adu and Oware (2019) in the Dormaa Municipality reported that repellants and ITNs were the most preferred methods used to prevent malaria in Dormaa. Residents have various misconceptions about these preventive methods. This situation poses a greater challenge to the activities of the health workers whose aim is to educate the residents on how to prevent the disease through the evidence based methods. It also came out that lack of funds and inadequate personal restrain the activities of nurses in their efforts to promote health in the area. (Adu & Oware, Prevention of malaria in Dormaa Municipality of Ghana, 2019).

Malaria is a life threatening disease that is transmitted by mosquitos and that makes it very much critical to conduct a study on knowledge, attitude and perception towards ITNs usage in the control of malaria among students of HFNMTC, Berekum.

### **1.1 Problem Statement**

Globally, there are concerns about malaria infection because it is one of the major causes of morbidity and mortality, especially in Africa (Kyu, Georgiades, Shannon, & Boyle, 2018). The 2011 World Malaria Report indicated that there were 216 million cases of malaria and an estimated 655,000 deaths in 2010 (Kyu et al., 2018).

The use of Insecticide Treated Nets (ITNs) stands out as a key vector control measure in line with the WHO assertion that ITNs can reduce the occurrence of malaria among children under 5 years of age by approximately 50% and all-cause mortality by 17% (WHO, 2020).

However, the success of ITNs relies on factors such as the knowledge, perception and attitude of individuals towards ITNs (Nyavor, et al., Assessing the ownership, usage and knowledge of Insecticide Treated Nets (ITNs) in Malaria Prevention in the Hohoe Municipality, Ghana, 2019). Many studies have attributed individual's choice to use an ITN to barriers such as

“structural inconveniences, perceptions of low malaria risk, perceptions of net ineffectiveness misconceptions of malaria symptoms and transmission, issues related to discomfort, use of nets for other purposes, and other social factors” (Mensah & Anto, 2020).

A study in Sunyani West found that (78.93%) of households with at least one ITN. A total of 817 nets were in possession of study participants out of which (74.17%) were hanged at the time of data collection. Out of the 326 participants who had ITNs, (73.62%) got theirs during the 2015 mass distribution campaign, (11.96%) received their ITNs during antenatal care visits, whilst (8.28%) bought the nets from the store. For those who did not have nets, 40.23% said that they prefer to use other methods, 35.63% did not have enough money to buy, 19.54% were of the view that mosquito nets are not easily available to buy. In all, (44.07%) of the respondents surveyed did not sleep under an ITN the night before the survey, with as many as (29.75%) of those with ITNs were also not using them the previous night, and (28.84%) of the hanged ITNs were also not used (Mensah & Anto, 2020).

It is therefore vital to gain insight into the knowledge, attitude and perception towards ITNs usage in the control of malaria among students of HFNMTTC, Berekum.

## **1.2 General objective**

To explore the knowledge, perception and attitude towards ITNs in the control of malaria among students of Holy Family Nursing and Midwifery Training College, Berekum.

## **1.3 Specific objective**

1. To assess the knowledge among students toward ITNs utilization in the prevention of malaria.
2. To explore the attitude of students towards ITNs utilization in the prevention of malaria.

3. To assess the perception among students towards ITNs utilization in the prevention of malaria.

#### **1.4 Operational definition**

**Knowledge:** information one has on a subject at hand.

**Attitude:** feeling about something

**Perception:** an individual's awareness regarding a subject

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter contains review of relevant literature related to the research topic. The sources of information include books, journals, online articles and research reports. It is organized based on the specific objectives of the study.

#### 2.1 Malaria Problem and Epidemiology

Malaria is a life-threatening disease caused by Plasmodium parasites, transmitted through the bite of infected female Anopheles mosquitoes. There are five parasite species that cause malaria in humans, and two of these species – *P. falciparum* and *P. vivax* – pose the greatest threat. *P. falciparum* is the most prevalent malaria parasite in the African continent and responsible for most malaria-related deaths globally. *P. vivax* is the dominant malaria parasite in most countries outside of sub-Saharan Africa (WHO, 2018).

According to the WHO (2017), approximately 3.2 billion people forming about half of the world's population were at risk with most of the incidence and deaths occurring in sub-Saharan Africa. Malaria affects about 95 countries and territories worldwide. Estimates released in December 2017 by WHO, shows that, there were about 214 million cases of malaria in 2015 and 438 000 deaths.

In sub-Saharan Africa, children under five bear the highest burden of malaria and mortality. Other vulnerable groups are primiparous women, people living with HIV/AIDS as well as migrants who are not immune, especially in their first pregnancy and patients with HIV/AIDS. In low and unstable transmission area, malaria can cause complications such as the risk of abortion, stillbirth and maternal mortality in low and unstable transmission areas; It can also

cause low birth weight resulting in an impact on child survival (WHO, 2019). Malaria is currently mesoendemic in Ghana. The 2017 Demographic and Health Study in children under 5 years showed that parasite prevalence ranged from 11.2% (Greater Accra) to 40% (Northern Region) (Ghana Health Service, Malaria report, 2019).

## **2.2 Insecticide-Treated Bed nets (ITNS)**

Effective application of insecticide-treated bed nets for malaria control comprises three main components including bed net acquisition or ownership, regular retreatment of bed nets with insecticide, and using bed nets correctly and/or consistently (Ovadjie, Adherence To The Use Of Insecticide-Treated Bed Nets By Nigerian, 2019). The successes achieved in efficacy trials have been associated with strict research conditions to maintain regular use of bed nets and bed net re-treatment. Due to their effectiveness as a vector control method, the WHO recommends that every person at risk from malaria, in areas identified for ITN use should sleep under a net (WHO, 2017).

In Ghana, Afoakwah, Nunoo, & Andoh (2019), found that survival rate of children under five who sleep under ITN is enhanced than those who do not sleep under ITN. There is an 18.8% reduced risk of not acquiring malaria when children under five sleep under bed nets than among children who do not sleep under treated bed nets.

## **2.3 Knowledge Regarding ITNs Utilization**

Insecticide treated nets (ITNs) are the mainstay of 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, 2017). ITNs have

been advocated as the most preventive tools against malaria especially in sub-Saharan Africa (WHO, 2020).

In a study on malaria knowledge, attitude and practices among migrants from malaria-endemic countries in Evrotas, Laconia, Greece, out of 130 respondents, 117(90%) were trained in the use of ITNs and knew ITNs as one of the most effective malaria preventive strategy if used regularly. They knew ITNs were supposed to be retreated after some use and could properly illustrate how to hang an ITN (Evlampidou, et al., 2018).

In a prospective hospital-based study about exploring the impact of targeted distribution of free bed nets on households bed net ownership in Sub Saharan Africa, Tatem and Smith (2020) found out that respondents showed high knowledge about ITNs utilization. Awareness of ITNs was found among 184(80%) of the 230 respondents. Of 130 participants, 117(90%) reported having heard about ITNs as a preventive strategy against malaria and knew ITNs were good for their children. Respondents knew that children were very vulnerable to malaria due to low immunity and could mention the advantages of having children sleep under ITNs which included good health and regular attendance to school.

San, Soe and Shwe, (2018) in a study on knowledge, attitude and practices on Insecticide Treated Nets in Myanmar, found out that, majority of the respondents had fairly low knowledge about retreating ITNs. Out of 256 respondents studied, 54.3% did not know the correct period of use before retreating an ITN. They did not know ITNs were supposed to be retreated between 6 to 9 months or after 10 to 20 washes.

In a study on knowledge and misconceptions about malaria among pregnant women in a post conflict internally displaced persons' camps in Gulu District, Northern Uganda, majority of respondents had high knowledge on the use of ITNs. They reported to have ever heard about

malaria and ITNs as one of the preventive strategies with the main source of information being from health centers followed by radio (Obol et al., 2019).

In a baseline study on malaria in Uganda, it was found that 99% of respondents knew about malaria with a high level of knowledge that mosquitoes are the main cause of malaria. Nearly half of the urban respondents 48.3% observed that the use of nets was the most effective way to prevent malaria. While among rural respondents there was limited knowledge of the best method for prevention (Nuwaha, 2016). In another study conducted to assess the distribution, knowledge, and utilization of ITNs in selected malaria prone areas of Ethiopia, indicated that 60.1% of the respondents had knowledge about nets (Ovadge, Adherence To The Use Of Insecticide-Treated Bed Nets By Nigerian, 2019).

A recent study conducted in Southern Ethiopia to assess knowledge and utilization of ITNs among freely supplied households showed that 62.6% of the 650 respondents indicated ITNs as the main preventive measure of malaria. Most (97.5%) of the respondents believed that sleeping under ITN has a benefit and only a little above five % (5.2%) of the respondents reported problems associated with sleeping under ITN (Towns, Tesfa, & Zone, 2018).

A baseline survey conducted by the Commercial Market Strategies Project titled “the level of knowledge, attitudes and practices about malaria and insecticide treated nets (ITNs)” in four districts of Uganda: Mukono, Jinja, Mbarara and Arual found that most respondents (99%) knew about malaria, and had heard malaria education messages (70.6%), mainly on radio (Okello-Ogojo, 2016). Another study in Nigeria, revealed that 78.9% of the pregnant women identified infected mosquitoes as the cause of malaria while 86% identified stagnant water as its breeding sites. They observed that knowledge of the benefit of insecticide-treated mosquito bed nets was less prominent as most of the selected subjects decried its high market price (Iriemeanam, Dosunmu, & Oyibo, 2018).

In Ghana, a study conducted in secondary schools and tertiary institutions in Ghana revealed that 93.9% of respondents in the senior high school and 86.7% in the tertiary institutions stated that ITNs are either used to protect oneself from mosquito bites or to prevent malaria. Accordingly, 79.8% of the respondents in senior high schools and 86.9% in tertiary institutions mentioned ITN as an effective strategy for protection against mosquito bites. These findings suggest that most high school and tertiary students in Ghana have adequate knowledge about ITNs and its usage in the prevention of malaria (Kudom & Mensah, 2017).

#### **2.4 Attitude Towards Utilization of ITNs**

In a study on community knowledge, attitudes and practices (KAP) on malaria prevention in Swaziland, it was observed that some respondents developed a negative attitude towards ITNs use because of the odour suspected to be from the drugs used to treat them. Different people were allergic to different things in their environment where smell was one of the major allergies people had (Khumbulani, et al., 2018). A descriptive cross-sectional study found that good attitude towards ITNs was very low among pregnant women in Kilifi District, Kenya (Njogore & Kimani, 2019).

In Nigeria, a study found that attitudes and beliefs of the people in the Enugu community was a factor in the use of insecticide treated nets (ITNs) among pregnant women. In that study 18.5% and 15.2% of the respondents gave feeling of suffocation and heat respectively as reasons for not using ITN while 49.5% of respondents expressed preference for white ITN colour (Adogu & Ijemba, 2020).

A descriptive cross-sectional survey was conducted among pregnant women in Lukolo Health Center Jinja District, Uganda. The study found that when respondents were asked whether they believed the use of ITNs was the best way of preventing malaria, the majority 67(53%) said no while the remainder, 59(47%) answered yes. Regarding if one could die due to malaria if you

didn't use an ITN, most 67(53%) answered yes while the least, 9(7%) weren't sure. Majority 67(53.2%) of the respondents reported sweating a lot when using the ITN. A few 42(33.3%) felt safe while the least 17(13.5%) felt they could suffocate (Muwoya, 2021).

## **2.5 Perception Towards ITN Utilization**

Runsewe-Abiodun et al. (2019) in a study about awareness and Knowledge about Insecticide Treated Nets (ITNs) amongst pregnant mothers in Ogun State, Western- Nigeria, found a positive attitude towards ITNs use in malaria prevention. Out of 256 respondents; 133(52.0%) perceived that malaria could be prevented even if one resided in a malaria endemic area, 139 (54.3%) believed that malaria could be prevented if one slept inside a mosquito net, 221(86.7%) believed that sleeping inside an ITN at night reduced mosquito bites and 192(75%) expressed willingness to buy ITNs if they did not get one for free. They also believed that the drugs used to retreat ITNs were safe.

A study by Obol et al. (2019) revealed that about 97% of pregnant women in a post conflict district in Northern Uganda perceived ITN as effective at preventing mosquitoes bites, which transmit malaria; and 96% who owned ITN was willing to continue using them.

In a descriptive study on the assessment of knowledge, attitude and practice about malaria and ITNs utilization among pregnant women in Ethiopia, the study showed that, perception towards ITNs use was positive. It was found out that, 70% of the respondents perceived ITNs use was comfortable and saved them from malaria infection. Majority who had suffered from malaria in the recent past revealed that ITNs use was not as a discomfort as suffering from malaria (Towns, Tesfa, & Zone, 2018).

In a study on evaluation of the 2018 long-lasting insecticide-treated net distribution for universal coverage in Togo, people had different negative perceptions on the use of ITNs.

These included; ITNs were perceived to be expensive, it was difficult to mend holes, they were inconvenient by increasing heat hence sweating, caused suffocation and that it was impossible to buy a net for everybody in a big family (Stevens, et al., 2019).

A study on international population movements and regional Plasmodium falciparum Malaria elimination strategies done in Ghana, found negative perceptions about sleeping under a bed net among the respondents. These included; too much heat at night was due to sleeping under ITNs, mosquitoes could still bite through ITNs and bed nets could not allow in enough air which led to suffocation (Tatem & Smith, 2020).

## **CHAPTER THREE**

### **MATERIALS AND METHODS**

#### **3.0 Introduction**

This chapter provides, the research area and research population, research design, sampling techniques, data collection method and instrument, data analysis techniques, ethical consideration, research limitation.

#### **3.1 Study area**

The study will be conducted at the Holy Family Nursing and Midwifery Training College, a tertiary institution located in Biadan, a suburb of Berekum East Municipality. Berekum East Municipality is located in the Bono region of Ghana. The school shares boundary with the Holy Family Hospital, Berekum, and Freeman Methodist School. The college was established in the year 1957. The college community consists of a number of Nursing, Post basic students and Midwifery students. The college runs three Diploma programs; Registered General Nursing (RGN) Diploma, Registered Midwifery (RM) Diploma and a two-year Post Basic Midwifery (NAP/NAC). Lectures takes place from Monday to Friday. The most spoken languages on campus are English and Twi.

#### **3.2 The study population**

The college has a student population of six hundred and eighty-eight. First years are two hundred and sixty-two, second years are two hundred and forty-two and Third years are one hundred and eighty-three. The entire trainees of Holy Family Nursing and Midwifery Training College, Berekum will be the target population.

### 3.3 Study design

A descriptive study design one which tends to describe the characteristics of a phenomenon being studied will be used for the study. The design will be adopted because participants or subjects will be observed in their natural and unchanged environment.

### 3.4 Sampling technique and Size

Sampling is the process of selecting a statistically representative sample of individuals from the population of interest (Majid, 2018). The two main types of sampling technique are (probability and nonprobability sampling). Nonprobability sampling consists of purposive selection of particular items of the population to represent a sample whereas probability sampling is the sampling method where each item in the population has an equal chance of inclusion in the sample and each sample having the probability of being selected in the sampling procedure (Mishra & Alok, 2019). For this study, simple random sampling will be used. For all students to have an equal chance of being selected, a list of all students from the academic office will be obtained, we will then use a random number generator from Google sheet to randomly select the participants.

The Yomane formula was used to calculate the sample size for the study. It is written as

$$n = \frac{N}{1+N(e)^2}$$

n is the sample size, N is the population size and e is the level of precision.

N = population of first year students

$$e = 0.05$$

$$n = \frac{688}{1+688(0.05)^2}$$

$$n = \frac{688}{1 + 688(0.0025)}$$

$$n = \frac{262}{2.72}$$

$$n = 253$$

Therefore, the sample size will be 253 students.

### **3.5 Data collection methods and instruments**

Data collection will be done through the use of structured and semi structured questionnaires consisting of both closed ended and open-ended questions for easy expression of views and ideas. This will be chosen as method of data collection because it covered a large number of people, relatively cheaper, avoided embarrassment on the part of the respondents, possible anonymity of respondents and no user bias. The questionnaire will be transcribed onto google forms into web based, the link will be shared to the various WhatsApp line of the selected respondents.

### **3.6 Data analysis techniques**

Data will be analyzed using Microsoft excel and presented in the form of frequency distribution tables and figures.

### **3.7 Ethical consideration**

A letter introducing the study will be obtained from the administration of the college seeking for permission to conduct the study. Explanation of the study purpose will be given to the selected students and those who will show interest will be recruited. Respondents will be assured of anonymity and confidentiality and will be instructed not to provide any form of identification on the questionnaire.

### **3.8 Limitation of the study**

The period which was allowed for the research coincided with lectures which reduced the concentration to the work.

## CHAPTER FOUR

### DATA ANALYSIS AND RESULTS

#### 4.0 Data Presentation & Analysis

This chapter deals with analysis of data collected from the field of study and the results obtained from the analysis. The data collected was analysed using Microsoft Excel. Descriptive statistical measures, such as tables with averages and percentages, along with graphs are used to show the occurrence of different observations as investigated in the study.

#### 4.1 Socio Demographic Variables

**Table 1: Age Distribution of Respondents**

Variable	Categories	Frequency (n)	Percentage (%)
Age	18-22	130	51.4
	23-27	117	46.4
	28-32	6	2.4

Table 1 clearly depicts that most (51.4%) of the respondents were aged between 18-22 years followed by 23-27 years (46.4%) and 28-32 years (2.4%).

**Table 2: Sex Distribution of Respondents**

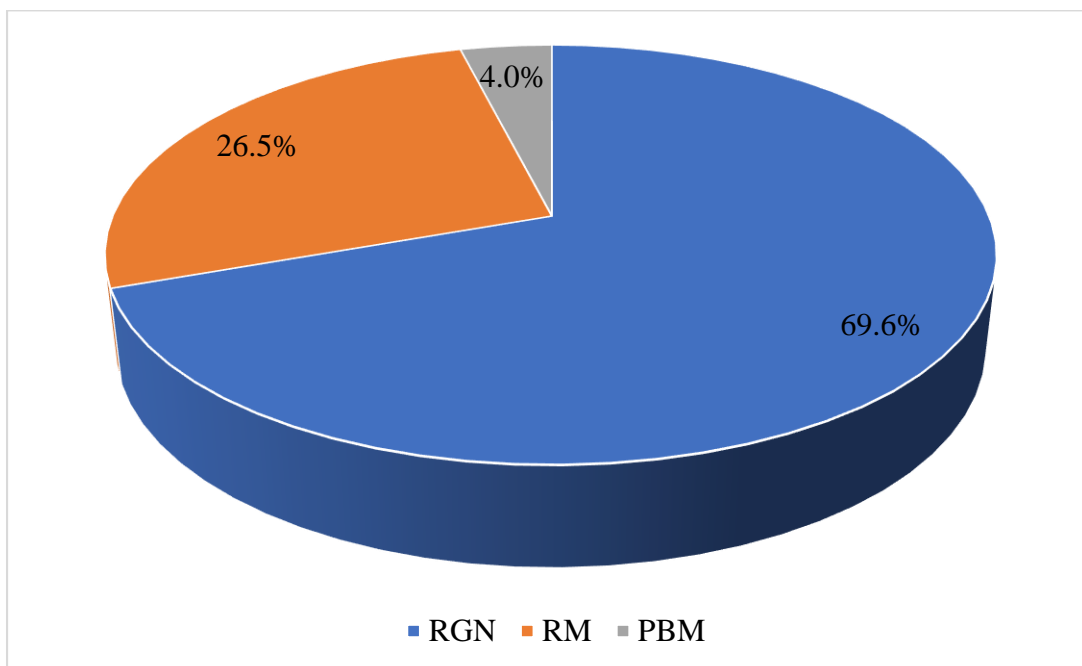
Variable	Categories	Frequency (n)	Percentage (%)
Sex	Male	73	28.9
	Female	180	71.1

Table 2 shows the sex distribution of respondents, over half (71.1%) of the respondents were females with 28.9% been males.

**Table 3: Ethnicity Distribution of Respondents**

Variable	Categories	Frequency (n)	Percentage (%)
Ethnicity	Akan	243	96.1
	Ga	6	2.4
	Ewe	4	1.6

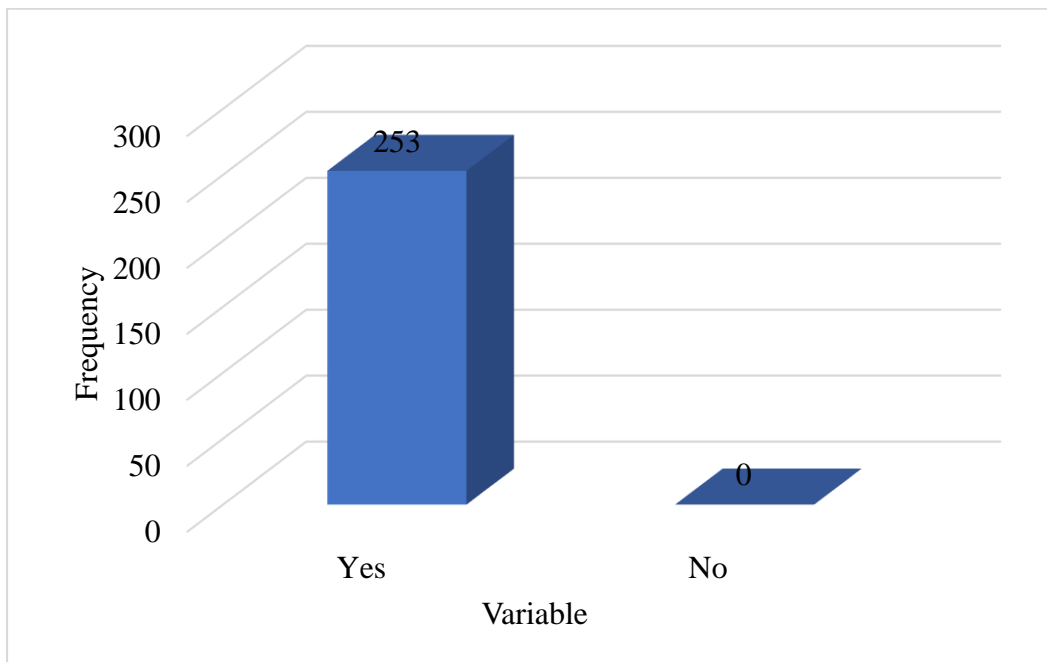
Table 3 illustrates the ethnicity of the respondents, majority (96.1%) were Akans followed by Ga (2.4%) and Ewe (1.6%).



**Figure 1: Program of Study**

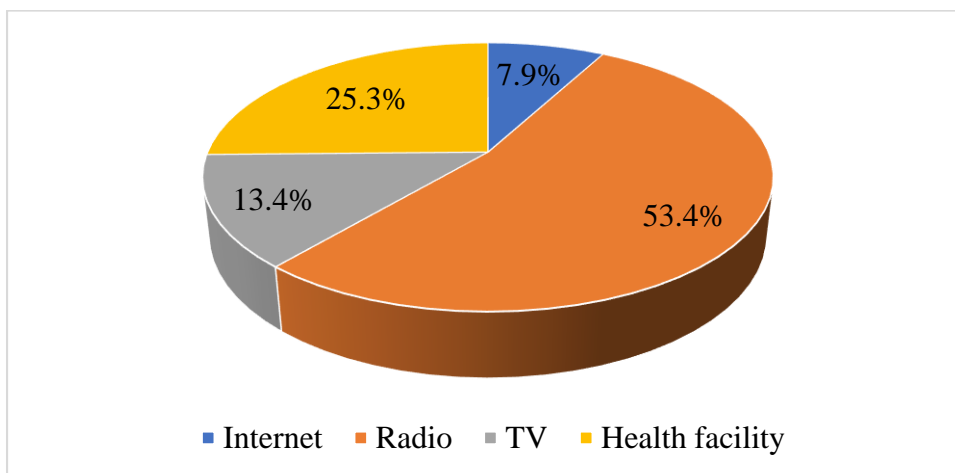
Figure 1 shows the program of respondents, most (69.6%) of the respondents were RGN's followed by RM's (26.5%) and Post Basics (4%).

## 4.2 Knowledge Regarding ITNs Utilization



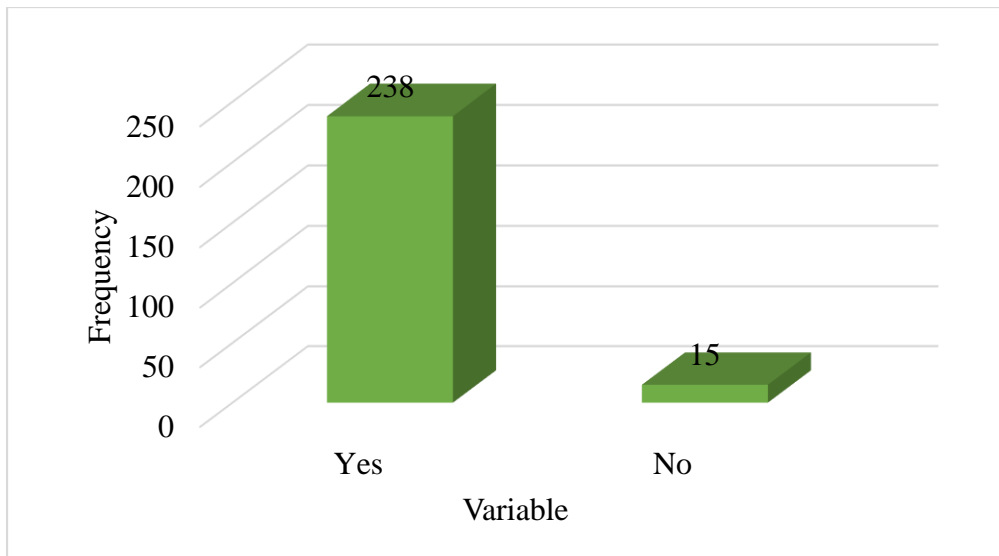
**Figure 2: Respondents Awareness about ITNs**

Unanimously, all (100%) the respondents knew about insecticide treated nets.



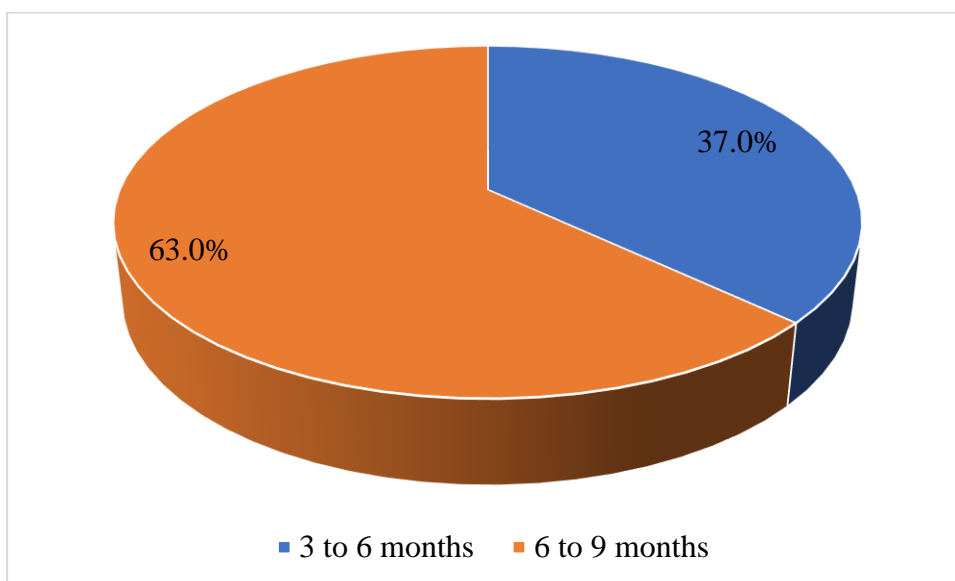
**Figure 3: Respondents Source of Information about ITNs**

From the illustration figure 3, over half (53.4%) of the respondents indicated radio as their source of information about ITNs followed by health facility (25.3%), television (13.4%), and internet (7.9%).



**Figure 4: Respondents Knowledge of Retreatment of ITNs**

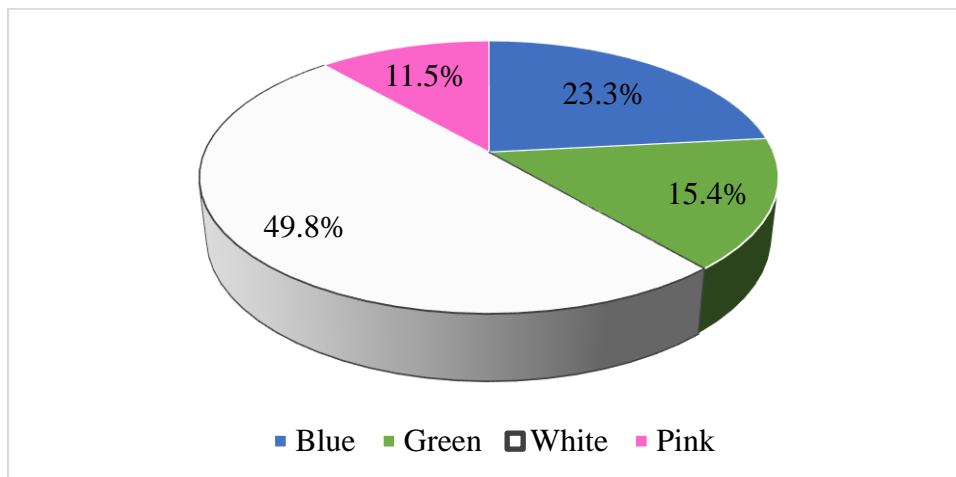
Almost all (94.1%) of them knew that insecticide treated nets are supposed to be retreated after some time. A few (5.9%) did not know about retreatment of insecticide treated nets.



**Figure 5: Respondents Answers to Number of Months ITN is Retreated**

Figure 5 shows that out of the (94.1%) who knew about retreatment of ITNs regarding the number of months, over half (63.0%) gave a correct answer for the number of months retreatment of ITN is done which is 6 to 9 months. 37.0% chose 3 to 6 months which is incorrect.

### 4.3 Attitude Towards Utilization of ITNs



**Figure 6: Respondents Preferred ITN Colour**

From figure 6, nearly half (49.8%) of them preferred white colored ITN followed by blue (23.3%), green (15.4%) and pink (11.5%).

**Table 4: Respondents Attitude Towards ITN Utilization**

Statement		Agree	Disagree	Don't know
ITNs have unpleasant odor as a result of drugs used to treat them	n	20	214	19
	%	7.9	84.6	7.5
I don't get enough air when I use an ITN	n	14	218	21
	%	5.5	86.2	8.3
I feel suffocated anytime I sleep under an ITN	n	19	224	10
	%	7.5	88.5	3.9
ITNs are the best way of preventing malaria	n	245	3	6
	%	96.8	1.2	2.4
I feel safe whenever I sleep under an ITN	n	235	10	8
	%	92.9	3.9	3.2

Illustration from table 4 shows that almost all (96.8%) of the respondents agreed that ITNs are the best way of preventing malaria, majority (92.9%) of them agreed that they feel safe whenever they sleep under an ITN. Regarding ITNs having unpleasant odor as a result of drugs used to treat them; most (84.6%) of the respondents agreed. Majority (86.2%) of the respondents disagreed that they don't get enough air when they sleep under an ITN while a few (5.5%) agreed. Majority (88.5%) of them disagreed they feel suffocated when they use an ITN while only (7.5%) agreed they feel suffocated when they sleep under an ITN.

#### 4.4 Perception Towards ITN Utilization

**Table 5: Respondents Perception Towards ITN Utilization**

Statement		Agree	Disagree	Don't know
ITNs can prevent mosquito bites	n	245	3	6
	%	96.8	1.2	2.4
ITNs are pretty comfortable to sleep under	n	160	64	29
	%	63.2	25.3	11.5
ITNs are too expensive when purchased from the shop	n	230	15	8
	%	90.9	5.9	3.2
There is too much heat with the use of ITN	n	235	10	8
	%	92.9	3.9	3.2

From table 5, majority of the respondents agreed that; ITNs are too expensive when purchased from the shop (90.9%), ITNs can prevent mosquito bites (89%) and there is too much heat with the use of ITN (92.9%). Most (63.2%) of the respondents agreed that ITNs are pretty comfortable to sleep under while a few (25.3%) disagreed.

## CHAPTER FIVE

### DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

#### 5.0 Introduction

In this chapter, the data analysed in chapter four were interpreted based on scientific evidence. The findings are briefly discussed with references to support the study.

#### 5.1 Discussions

##### 5.1.1 Knowledge Regarding ITNs Utilization

In the current study all (100%) the respondents knew about insecticide treated nets. This finding confirms the study by Tatem and Smith (2020), they found that a whopping 184 (80%) of the respondents were aware of ITNs.

In the current study over half (53.4%) of the respondents indicated radio as their main source of information about ITNs followed by health facility (25.3%), television (13.4%), and internet (7.9%). Similarly, Okello-Ogojo (2018) found that most respondents had heard malaria education messages (70.6%), mainly on radio. Also, Obol et al. (2014) reported that majority of respondents had heard about malaria and ITNs as one of the preventive strategies with the main source of information being from health centers followed by radio.

Almost all (94.1%) of them knew that insecticide treated nets are supposed to be retreated after some time. Correspondingly, Evlampidou et al. (2018) in their study reported that majority (90%) knew ITNs were supposed to be retreated after some use and could properly illustrate how to hang an ITN.

In the current study out of the (94.1%) who knew about retreatment of ITNs regarding the number of months, over half (63.0%) gave a correct answer for the number of months retreatment of ITN is done which is 6 to 9 months. Contrary, San et al. (2018) found that Out

of 256 respondents studied, 54.3% did not know the correct period of use before retreating an ITN. They did not know ITNs were supposed to be retreated between 6 to 9 months or after 10 to 20 washes.

### **5.1.2 Attitude Towards Utilization of ITNs**

In the current study nearly half (49.8%) of them preferred white colored ITN followed by blue (23.3%), green (15.4%) and pink (11.5%). Correspondingly, Adogu and Ijemba (2017) found that 49.5% of respondents expressed preference for white ITN colour.

Almost all (96.8%) of the respondents agreed that ITNs are the best way of preventing malaria. Similarly, Evlampidou et al. (2018) in their study found that 117(90%) were trained in the use of ITNs and knew ITNs as one of the most effective malaria preventive strategy if used regularly. Also, Tatem and Smith (2020) found that of 130 participants, 117(90%) reported having heard about ITNs as a preventive strategy against malaria and knew ITNs were good for their children. Contrastingly, Muwoya (2021) found that majority 67(53%) of the respondents said no when they were asked whether they believed the use of ITNs was the best way of preventing malaria.

Regarding ITNs having unpleasant odor as a result of drugs used to treat them; most (84.6%) of the respondents agreed confirming what Khubulani et al. (2018) reported their study which was most of the respondents developed a negative attitude towards ITNs use because of the odour suspected to be from the drugs used to treat them. Different people were allergic to different things in their environment where smell was one of the major allergies people had.

In the current study (7.5%) agreed they feel suffocated when they sleep under an ITN. Similarly, Adogu and Ijemba (2017) found that 18.5% of the respondents gave feeling of suffocation as reasons for not using ITN.

### **5.1.3 Perception Towards ITN Utilization**

In the current study majority of the respondents agreed that; ITNs are too expensive when purchased from the shop (90.9%), ITNs can prevent mosquito bites (89%) and there is too much heat with the use of ITN (92.9%). Similar findings have been reported by Stevens et al. (2019). In their study people had different negative perceptions on the use of ITNs. These included; ITNs were perceived to be expensive, it was difficult to mend holes, they were inconvenient by increasing heat hence sweating, caused suffocation and that it was impossible to buy a net for everybody in a big family. Also, Runsewe-Abiodun et al. (2016) in their study found that (86.7%) believed that sleeping inside an ITN at night reduced mosquito bites.

Most (63.2%) of the respondents agreed that ITNs are pretty comfortable to sleep under. Equally, Towns et al. (2018) found that 70% of the respondents perceived ITNs use was comfortable and saved them from malaria infection.

### **5.2 Conclusion**

The study has revealed that the participants had good level of knowledge regarding ITNs. They also showed good attitude and perception towards utilization of ITNs in the prevention of malaria.

### **5.3 Recommendation**

The following recommendations are made based on the findings of the study;

1. The government should education talks on the benefits of sleeping under an ITN over fears such as suffocation and perceptions that the net is too hot.
2. The health care teams in different communities should be empowered to give door to door education on utilization of ITNs in the prevention of malaria. They should

physically visit the households and check the state of ITNs and advise them accordingly.

3. Both print and visual media such as newspapers, posters, flyers, brochures, radios and televisions must be instrumental in educating the public on use of ITNs.

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**APPENDICES**  
**QUESTIONNAIRE**

Dear Respondent,

We are students of Holy Family Nursing and Midwifery Training College, Berekum conducting research on the topic; knowledge, perception and attitude towards ITNs in the control of malaria among students of Holy Family Nursing and Midwifery Training College, Berekum.

We would appreciate it greatly if you would answer the following questions for us. We wish to assure you of confidentiality and privacy of this research study. To ensure confidentiality and anonymity, your name, index number and room numbers are not required. Participation is voluntary and you have the sole right to withdraw from participating in this study at any time of your discretion. Please sign in the space provided to indicate that you consent to participating in this study.

*Please Tick [✓] The Appropriate Box Where Applicable*

Thank you.

**SECTION A: SOCIO DEMOGRAPHIC DATA**

1. Age: a. 18-22  b. 23-27  c. 28-32
2. Sex: a. Male  b. Female
3. Ethnicity a. Akan  b. Ga  c. Ewe  d. Other (specify): .....
4. Program: a. RGN  b. RM  c. Post basic

**SECTION B: KNOWLEDGE REGARDING ITNS UTILIZATION**

5. Do you know about ITNs?  
a. Yes  b. No
6. Where did you hear about it?  
➤ Internet   
➤ Radio   
➤ Television   
➤ Health facility   
➤ Other: .....
7. ITNs are the most effective malaria preventive method  
a. Agree  b. Disagree  c. Don't know
8. Are you aware that ITNs are retreated after some time?  
a. Yes  b. No
9. ITNs are supposed to be retreated after;  
*Tick [√] the correct answer*  
➤ 3 to 6 months   
➤ 6 to 9 months   
➤ 5 to 10 washes   
➤ 10 to 20 washes

**SECTION C: ATTITUDE TOWARDS UTILIZATION OF ITNS**

10. Which ITN colour do you prefer?  
a. Blue  b. Green  c. White  d. Pink
11. ITNs have unpleasant odor as a result of drugs used to treat them  
a. Agree  b. Disagree  c. Don't know

12. I don't get enough air when I use an ITN

a. Agree  b. Disagree c. Don't know

13. I feel suffocated anytime I sleep under an ITN

a. Agree  b. Disagree c. Don't know

14. ITNs are the best way of preventing malaria

a. Agree  b. Disagree c. Don't know

15. I feel safe whenever I sleep under an ITN

a. Agree  b. Disagree c. Don't know

#### **SECTION D: PERCEPTION TOWARDS ITN UTILIZATION**

16. ITNs can prevent mosquito bites

a. Agree  b. Disagree c. Don't know

17. ITNs are pretty comfortable to sleep under

a. Agree  b. Disagree c. Don't know

18. ITNs are too expensive when purchased from the shop.

a. Agree  b. Disagree c. Don't know

19. There is too much heat with the use of ITN

a. Agree  b. Disagree c. Don't know

NATIONAL CATHOLIC HEALTH SERVICE (DIOCESE OF SUNYANI)  
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P. O. Box 21,  
Berekum, B/A  
Ghana, W/Africa  
Tel. 0352222124  
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January 30, 2023

Date .....

Joseph Appiah  
Holy Family NMTC  
Post Office Box 21  
Berekum

Dear Mr. Appiah

**PERMISSION TO CONDUCT RESEARCH**

With reference to your Memorandum dated January 26, 2023, I write to notify you that the students listed below have been granted permission to conduct their research in the College on the topic 'Knowledge, perception and attitude towards Insecticide Treated Nets (ITNs) in the control of malaria among students of Holy Family Nursing and Midwifery Training College, Berekum'

1. Alasidi Philomina
2. Akomaa Minta Rhoda

Thank you.

Yours sincerely

ACADEMIC CO-ORDINATOR - NURSING  
HOLY FAMILY NURSING & MIDWIFERY  
TRAINING COLLEGE - BERKUM

Rev. Sr. Margaret Afrifa  
Academic Coordinator for Nursing  
For: Principal