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DEPARTMENT OF NURSING

DIPLOMA PROGRAMMES



**FACTORS THAT CONTRIBUTE TO HIGH PREVALENCE OF MALARIA AMONG
CHILDREN UNDER FIVE YEARS WHO ARE ON ADMISSION AT HOLY FAMILY
HOSPITAL, BEREKUM PEDIATRIC WARD**

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DECLARATION

We hereby declare that this submission is our own work towards the Diploma in General Nursing 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

Background/Introduction: Malaria is a potentially fatal acute disease resulting from infection by parasites transmitted through the bites of infected female *Anopheles* mosquitoes (Varo, Chaccour, & Bassat, 2020). The disease stems from five distinct parasite species, however, *Plasmodium falciparum* are the primary contributors to the grave threat posed by the disease, particularly in sub-Saharan Africa (SSA) where the population is largely impacted (Howes, 2019).

Objective: The main objective of the study is to assess the factors that contribute to high prevalence of malaria among children under five years who are on admission at Holy Family Hospital, Berekum Pediatric ward.

Method: A descriptive cross-sectional survey was used in this study. The respondents were obtained using the convenient sampling method. A total of 30 participants were selected as the sample size.

Results: Majority of the respondents (96%) indicated the cause of malaria to mosquito bites, common symptoms of malaria; fever (100%), vomiting (88%), diarrhea (78%), headache (98%) and body pains (90%), environmental factors that contributes to malaria and these were their respondents; poor sanitation (98%), bad housing condition (84%), standing water (6%) and animal population (2%), preventive measure of malaria includes; sleeping in mosquito treated net (100%), use of mosquito repellents (88%), avoiding outdoor exposure at night (70%), wearing of protective clothing (50%) and spraying the room with insecticide spray (80%).

Conclusion: Respondents had a good/high knowledge about malaria, environmental factors that contribute to malaria and these were their respondents; poor sanitation, bad housing condition, and stagnant water and respondents had a good compliance/adherence with

infection prevention protocol and majority of the respondents (94%) receive training on infection prevention control.

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ABBREVIATION

WHO	World Health Organization
SSA	Sub-Saharan Africa
ITNs	Insecticide-Treated Nets
IRS	Indoor Residual Spraying
MIS	Malaria Indicator Surveys
CDC	Center for Disease Control and Prevention
UNICEF	United Nations Children's Education Fund
USAID	United States Agency for International Development
PMI	President's Malaria Initiative
NMCP	National Malaria Control Programme
SPSS	Statistical Package Social Sciences
HMM	Home Management of Malaria
ACT	Artemisinin based Combination Therapy
GPM	Generalized Pairwise Modeling
PD	Prophylactic Drugs
CHAG	Christian Health Association of Ghana

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Malaria is a potentially fatal acute disease resulting from infection by parasites transmitted through the bites of infected female *Anopheles* mosquitoes (Varo, Chaccour, & Bassat, 2020). The disease stems from five distinct parasite species, however, *Plasmodium falciparum* are the primary contributors to the grave threat posed by the disease, particularly in sub-Saharan Africa (SSA) where the population is largely impacted (Howes, 2019).

As of June 2023, only 40 countries had achieved a malaria-free status, reporting zero indigenous cases (World Health Organization [WHO], 2023). The majority of malaria incidents remain concentrated in Africa, particularly in the SSA region, constituting 88% of all reported cases (WHO, 2023). Furthermore, malaria-related mortality showed a 50% reduction from the year 2000 to 2015, decreasing from around 30 to 15 deaths per 100,000 at-risk population (WHO, 2023). This decline persisted, albeit more slowly, reaching 14 in 2019. However, it rose to 15.1 in 2020, followed by a marginal decrease to 14.8 in 2021. In the same year (2021), nearly all malaria-related deaths (96%) occurred in 29 countries, with four SSA African countries - Nigeria, the Democratic Republic of Congo, Niger, and Tanzania collectively contributing to over half of these deaths (WHO, 2023).

Report indicates that under five (UN5) children are particularly vulnerable to the transmission and impact of malaria largely due to their immature immune system and increased exposure to the malaria parasite (Ranjha, Singh, Mohan, Anvikar, & Bharti, 2023). From the year 2000 to 2019, several global efforts in malaria control, including implementation of interventions such as insecticide-treated nets (ITNs), intermittent preventive treatment of malaria in infants

(IPTi), and indoor residual spraying (IRS) have contributed to about 47% reduction in malaria incidence and mortality among UN5 children (United Nations Children's Fund [UNICEF], 2023). Despite these efforts, malaria-related deaths among children UN5, particularly, in SSA are still persistent with significant death rates in places like Nigeria and Tanzania, highlighting the ongoing need for more protective measures for this vulnerable group (Obasohan, Walters, Jacques, & Khatab, 2021).

Previous studies have identified several factors influencing malaria in children UN5 in SSA including usage of insecticide-treated nets (ITNs), environmental conditions, and access to healthcare services (Emina & Yé, 2021). However, these studies had been largely country-specific and had not concentrated on the potentially connected and nuanced factors present across multiple high-risk countries. Additionally, there are changing dynamics in socioeconomic and demographic factors associated with malaria, especially in UN5 children (Rouamba, 2019), necessitating a continuous investigation into the prevalence and factors associated with the disease in this age cohort. Moreover, limited research has specifically focused on the influence of Fansidar uptake during pregnancy on malaria prevalence in UN5 in SSA. Considering these gaps, this study primarily investigated the prevalence of malaria in UN5 children in high-risk SSA countries using the most recent Malaria Indicator Surveys (MIS).

Malaria is a major public health concern in the world and more especially among pregnant women and children because of their vulnerability. As such, malaria has been described as an entrenched global health challenge (Center for Disease Control and Prevention [CDC], 2019). The disease is endemic in over hundred countries in the world. Approximately half of the world's population is at risk of malaria and nearly one million people die of the disease each year . Most malaria cases and deaths occur in sub-Saharan Africa. However, Asia, Latin

America, the Middle East, and parts of Europe are also affected to a lesser extent. Hence, malaria affects children of all regions both poor and rich (WHO, 2020).

Globally, there were 216 million cases of malaria in 106 endemic countries and territories in the world in 2010, out of which 86 percent of the victims were children under five years of age. The world malaria report of 2011 shows an estimated 655,000 malaria deaths in the world, majority of which were under-five children from Africa (WHO, 2020). Thus, it remains a leading cause of death in children under five years (Houeto, D'Hoore, Ouendo, Charlier, & Deccache, 2018). The World Health Organisation and United Nations Children's Education Fund (UNICEF) also indicate in the African Malaria Report that an outrageously higher number of over 3,000 children die from malaria in Africa daily with a child dying every 30 seconds ([WHO] & [UNICEF], 2020).

Malaria is also a major threat to public health in Ghana and the burden of the disease is a challenge to child survival. It is also the leading cause of morbidity and mortality among children under five years in the country (Asante & Asenso-Okyere, 2020). Besides, it has been identified as the leading cause of absenteeism in school age children in Ghana (Baafi & Kodzitse, 2019). Out of the 3.5 million cases of suspected malaria cases that were reported to the public health facilities in Ghana, 20,000 were children under the age of five. The disease thus accounts for 61 percent of hospital admissions of under-five children and 25 percent of under-five mortality.

A number of studies have been conducted on malaria among under-five children and had attributed the disease to nonuse of insecticide treated nets (ITNs) by care givers. (Ahorlu, Dunyo, Afari, Koram, and Nkrumah (2019), among other studies have also conducted studies on malaria-related beliefs and behaviours, treatment, prevention, and control in Southern Ghana. However, little is known about sociodemographic determinants of malaria prevalence

among under-five children in Ghana. Consequently, this paper sought to examine the sociodemographic factors that determine malaria cases among under-five children in Ghana.

1.1 Problem Statement

Malaria is a life-threatening disease caused by infection through the bite of a female *anopheles* ' mosquito and poses the biggest health threat to children under five and pregnant women in malaria-prone areas such as sub-Saharan Africa. It is considered an endemic disease and a public health problem in Ghana due to the significant death toll associated with it (Ghana Demographic and Health Survey, 2022). It also leads to poverty and low productivity due to human development, as well as due to its financial burden on households and the economy (Thuilliez, d'Albis, Niangaly, & Doumbo, 2021). In Ghana it is estimated that every malaria episode recorded corresponds to an average of 5 workdays lost; 3 days to the patient and 2 days to the caretaker (Asenso-Okyere & Dzator, 2019). Figures from the World Health Organisation [WHO], (2018) also suggest that malaria alone accounts for about 4 sick days in a month, and 6.4% of income loss in Ghana. Concerted efforts by governments, international organisations and charities to combat the disease have resulted in a sharp decline in global malaria morbidity and mortality by 37 and 60% respectively between 2003 and 2015 (WHO, 2019). However, nearly half of the world's population, or 3.2 billion people, are still vulnerable to this disease. Sub-Saharan African regions, in particular, carry a disproportionately high share of the global malaria burden. In 2015, the region experienced approximately 88% of global malaria infections and 90% of malaria deaths (WHO, 2019).

Malaria prevalence in rural areas (12.8%) is about three times that of urban (4.3%). Greater Accra (2.0%) has the lowest prevalence followed by the western North (4.4%) and Volta (6.4%). Malaria prevalence in children declines by a third in the past decade but the prevalence in rural areas is about three times as high compared to urban, preliminary findings

on malaria in children from the 2022 Ghana Demographic and Health Survey (Dzakpata, 2023).

Over the past decades, there has been a significant increase in investment towards the fight against malaria. WHO reports an increase in resources for malaria control from US\$ 960 million in 2005 to US\$ 2.5 billion in 2014 globally (WHO, 2019). In Ghana, as part of an eight-year malaria strategic plan to bring down the incidence of malaria by 2015, the government pledged to contribute US\$ 231 million in 2008. Donors, including The United States Agency for International Development (USAID), Presidents Malaria Initiative (PMI), The World Bank, United Nations Children's Fund (UNICEF) and the private sector, all financially support malaria control programmes in Ghana (National Malaria Control Programme [NMCP], 2018). PMI is an inter-agency initiative led by USAID. Launched in 2005, PMI has a task of reducing malaria-related mortality by 50% across 15 high-burden countries in sub-Saharan Africa including Ghana.

Unfortunately, the rising investment to control the disease does not lead to a significant fall in infection among young children. Contrary to the global trend, malaria infection rates among children under-five in Ghana have been rising despite the efforts and investments.

According to the Ghana National Malaria Control Programme (NMCP), malaria kills at least 3 children every day and also tops OPD cases in Ghana. While it is encouraging to observe a decline in in-patient deaths emanating from malaria infection among children under-five, the statistics on morbidity and in-patient cases remain alarming.

Data collected on the malaria cases for under five years children from the pediatric ward of Holy Family Hospital, Berekum indicated that in 2022 there were 250 malaria cases, 2023 there were 157 malaria cases, 2024 there were 201 malaria cases and from January to May there were 82 malaria cases.

Given these, it is necessary to assess the factors that contribute to high prevalence of malaria among children under five years who are on admission at Holy Family Hospital, Berekum pediatric ward.

1.2 General Objective

To assess the factors that contribute to high prevalence of malaria among children under five years who are on admission at Holy Family Hospital, Berekum Pediatric ward.

1.3 Specific Objectives

1. To assess the knowledge of malaria among parent of children under five years on admission at Holy Family Hospital Berekum Pediatric ward.
2. To determine the environmental factors contributing to high prevalence of malaria among children under five years who are admitted to the Holy Family Hospital, Berekum Pediatric ward.
3. To identify the preventive measures of malaria among children under five years who are admitted to the Holy Family Hospital, Berekum Pediatric ward.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter contains review of relevant literature related to the research topic. A well-structured literature review begins with broad or general information, then narrows the focus to those studies most closely related to the research problem.

2.1 Overview

Malaria remains globally endemic in 85 countries, and it is mostly concentrated in the underdeveloped tropical and subtropical regions even though its occurrences vary with geographic–climatic environmental conditions and cultural–hygienic social factors (World Health Organization, 2021). Compared with 2019, the estimated malaria cases and deaths increased to 241 million and 627,000, respectively, in 2020, and approximately 95% of cases and 96% of deaths occurred in the WHO African Region, in which Sierra Leone had a heavy malaria burden, with an estimated 2,617,968 cases and 8054 deaths (World Health Organization, 2021). An estimated 77% of all malaria deaths occurred in children under 5 years of age, mostly in Sub-Saharan Africa. The entire population in Sierra Leone is at risk of malaria, but children under-5 and pregnant women are the most vulnerable groups.

Etiologically, malaria is mainly transmitted through the infected *Anopheles* mosquitoes. *Plasmodium falciparum* is responsible for over 90% of malaria cases and all the severe types of the disease in Sierra Leone (DePina, et al., 2019).

Despite significant efforts over the century to eradicate or manage in Cameroon, it continues to be a serious public health problem throughout the world, affecting more pregnant women and children due to their vulnerability (Talipouo, et al., 2019). Malaria has been regarded as a

long-standing global health problem because of the high morbidity and death rates among pregnant women and children (Taremwa, et al., 2019). In addition to that, malaria is viewed as a life-threatening condition caused by parasites that are transferred to people by the bites of infected female *Anopheles* mosquitoes (Goshu & Yitayew, 2019). Malaria is one of the deadliest infectious diseases, with an estimated 229 million cases and 409,000 deaths worldwide in 2019 (Imboumy-Limoukou, et al., 2020). Malaria's poor outcomes were attributed to ineffective treatment and inadequate maternal knowledge of preventive measures, examples; poor logistics systems leading to undersupply of drugs and diagnostics, health workers issues, lack of self-efficacy of women to provide the treatment as required, socio-cultural determinants of health, side effects management, partial drug resistance (Elnour, et al., 2021).

2.2 Knowledge of malaria

Adum, Agyare, Owusu-Marfo, and Agyeman (2023), conducted a quantitative cross-sectional study to knowledge, attitude and practices of malaria preventive measures among mothers with children under five years in a rural setting in Ghana. The study recruited 281 mothers with children under the age of five using simple random sampling technique. Data was collected using an interviewer administered questionnaire and was analysed using the statistical package for the social sciences (SPSS) version 22. The study found that, the majority of participants have a high level of knowledge about malaria, including its causes, signs and symptoms. It was therefore concluded that, majority of mothers were knowledgeable about the causes, signs and symptoms, and preventive measures of malaria in children under the age of five.

Koroma, Wang, Guo, and Zhou (2022), conducted a cross-sectional survey among caregivers of children under-5 visiting the out-patient department of six selected hospitals/community health centers. The study aimed to assess the knowledge, attitudes, and practices toward

malaria control and prevention among caregivers of children under 5 in the Western Area of Sierra Leone. A total of 350 caregivers were recruited for the study and data was collected via questionnaire interviews. The study revealed that, total of 97.1% of the respondents were women and the majority of them were young mothers; 46.3% of respondents were unemployed; and 27.1% received no education. Only 1.4% accessed malaria related information from the internet/social media. This KAPs survey indicated that a misconception of the cause, transmission, and clinical symptoms of malaria; unawareness of its lethality and its severity; and inappropriate prevention and treatment behaviors, such as self-medicating, were still in existence among some caregivers.

A descriptive cross-sectional survey was conducted by Wombo, Ntigu, Oyegue-Liabagui, Ibinga, and Maghendji-Nzondo (2023) to assess the mothers' perception and knowledge of malaria and its severity. The study use a simple random sampling to recruit 146 mothers from different households. It was found that, among the respondents, 98.6% of mothers had heard of malaria and 55.5% had heard of severe malaria.

Hassan, Afolaranmi, Tagurum, Agbo, and Sule (2019), conducted a cross-sectional study to determine the knowledge of malaria and practice of home management of malaria among mothers of under five clinic in a tertiary health institution. A total of 66 participants were involved in the study. It was found that, majority (95.5%) of the mothers of under-fives were aware of malaria while only 34.8% had heard of Home Management of Malaria (HMM).

Oreagba, Onajole, Olayemi, and Mabadeji (2018), conducted a descriptive cross-sectional study to assess the knowledge of malaria amongst caregivers of young children in rural and urban communities in Southwest Nigeria. A structured questionnaire was administered to caregivers of children under the age of five years in 1472 households using a multistage random sampling technique. The study revealed that, many respondents (65%) attributed the

cause of malaria to mosquito bite. The knowledge of malaria treatment (particularly the knowledge of pediatric doses) was generally poor. Caregivers in urban areas had better understanding of the dosage regimen for both adult and pediatric doses ($p < 0.05$). It was therefore concluded that, the caregivers of children in the communities studied have poor knowledge of malaria.

Precious, Janet, and Catherine (2016), conducted a cross-sectional survey to assess the knowledge, attitude and practices of mothers regarding the prevention of malaria in children between 0-5 years. Convenience sampling method was used to select 160 mothers that attend child survival clinic and children outpatient clinic in Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State. Questionnaire was used to collect data from the respondents, and the data was analysed using statistical package for social sciences (SPSS, version 17). Findings from the study showed that 55% of the respondents had a good knowledge about malaria, 78% of the respondents had a positive attitude regarding malaria prevention 37% of the respondents practiced malaria prevention.

Oluwasogo, Henry, Abdulkasheed, Olawumi, and Olabisi (2016), conducted a community-based cross sectional survey was conducted in different households among mothers' with children below five (5) years of age selected by systematic random sampling. A total of 50 respondents were interviewed in the rural community using a semi-structured, paper-based questionnaire designed to capture information on socio-demographic characteristics, active knowledge, treatment seeking behaviour of caregivers/ parents, types of treatment employed by the care-givers and personal protective measures against Malaria. It was found that, most respondents correctly associated malaria with infected female anopheles mosquito bites (99.7%) and reported that they will seek treatment within 24 hours of noticing the first symptoms of malaria. Although the respondents were unaware of the susceptibility of children to malaria parasite, thirty seven percent (37%) preferred to use herbs while (17%)

will take children to the clinic/dispensary for treatment. Caregivers also make use of artemisinin based combination therapy (ACT) (7%), analgesics (5%), antibiotics (5%) but majority of the respondents use self-prescribed palliative drug combinations/over-the-counter drugs (40%) in treating malaria. They were also aware of preventive measures against malaria such as insecticide treated bed-nets (28%), but there was low ownership and usage of the bed nets among respondents as only 19% of them have access to bed nets.

Owusu-Marfo and Agyeman (2023), conducted a cross-sectional study with a quantitative approach to assess the knowledge, attitude and practices of malaria preventive measures among mothers with children under 5 years old. The study was facility based and involved the use of interviewer administered questionnaires to collect data from 281 mothers with children under the age of five. Simple random sampling method was used to select the respondents. The data collected was analysed using the statistical package for the social sciences (SPSS) version 22 and results presented in tables. The study found that, majority of the respondent had adequate knowledge about malaria.

2.3 Environmental factors that contribute to high prevalence of malaria

Austin (2018), conducted a cross-national study to determine the environmental and social causes of malaria prevalence. The study found that, deforestation and biodiversity loss associated with primary sector export flows are key drivers of malaria rates, alongside notable influences of basic health and social services.

Nkuo-Akenji, Ntonfor, and Ndukum (2017), conducted a study to determine the environmental factors affecting malaria parasite prevalence in rural Bolifamba, South-West Cameroon. The study population comprised 1,454 subjects aged 0 – 65 years. The study found that, malaria parasite prevalence ($P=0.001$) and parasite density ($P=0.03$) were higher in the individuals of wooden plank houses than those of cement brick houses. Inhabitants of

houses surrounded by bushes or garbage heaps and swamps or stagnant water showed higher malaria parasite prevalence and densities compared with those from cleaner surroundings.

Adeola, Botal, Olwoch, and Rautenbach (2016), conducted a study to identify the environmental factors and population at risk of malaria in Nkomazi municipality, South Africa. The study used 8 softwares to statistically analyse data. Using remote sensing technology, a Landsat 8 image of 4th October 2015 was classified using object-based classification and a 5-m resolution. Spot height data were used to generate a digital elevation model of the area. A total of 60,718 malaria cases were notified across 48 health facilities in Nkomazi municipality between January 1997 and August, 2015. Malaria incidence was highly associated with irrigated land ($P = 0.001$), water body ($P = 0.011$) and altitude ≤ 400 m ($P = 0.001$). The multivariate model showed that with 10% increase in the extent of irrigated areas, malaria risk increased by almost 39% in the entire study area and by almost 44% in the 2-km buffer zone of selected villages. Malaria incidence is more pronounced in the economically active population aged 15–64 and in males. Both incidence and case fatality rate drastically declined over the study period.

Dale, et al. (2018), conducted a review of the literature was carried out to evaluate malaria and its environmental relationships. Research, in 6 parts of Indonesia, addressed the relationship between malaria incidence and physical and socioeconomic environmental factors, using longitudinal and cross-sectional approaches. Physical factors, which are generally important for malaria, included rainfall, mosquito breeding and resting sites, their distance from human habitation, and elevation, though the latter was not statistically significant. Housing conditions were occasionally important. Social and economic factors of importance were income, education, use of bednets and pattern of outdoor activities, especially at night.

Adefemi, Awolaran, and Wuraola (2015), conducted a review to determine the social and environmental determinants of malaria in under five children in Nigeria. The study showed that, the persistence of Malaria, especially amongst under 5 children, can be linked to a dynamic interplay of biological, social and environmental risk factors and a host of health determinants. Cultural beliefs and values, knowledge and healthcare awareness of caregivers, the built environment, access, availability and affordability of food, water and healthcare are identified and discussed as the various sociocultural, behavioural and environmental factors encumbering the success of malaria control initiatives in the country.

2.4 Preventive measures of malaria

Wangdi, Furuya-Kanamori, and Clements (2018), conducted a systematic review to identify the effectiveness of malaria prevention measures. A systematic literature review was undertaken across four medical and life sciences databases (PubMed, Cochrane Central, Embase, and Web of Science) from their inception to July 2016. Data from the included studies were analysed for the effectiveness of several measures against no intervention. This was carried out using an automated generalized pairwise modeling (GPM) framework for network meta-analysis to generate mixed treatment effects against a common comparator of no intervention (NI). The study found that, there were 30 studies that met the inclusion criteria from 1998–2016. The GPM framework led to a final ranking of effectiveness of measures in the following order from best to worst: prophylactic drugs (PD), insecticide-treated nets (ITN), indoor residual spraying and untreated nets, in comparison with NI. However, only ITN (RR: 0.49, 95% CI: 0.32–0.74) showed precision while other methods [PD (RR: 0.24, 95% CI: 0.004–15.43), IRS (RR: 0.55, 95% CI: 0.20–1.56) and UN (RR: 0.73, 95% CI: 0.28–1.90)] demonstrating considerable uncertainty associated with their point estimates.

Tizifa and Kabaghe (2018), conducted a study that aimed to review the prevention and control strategies for malaria, to assess their impact towards reducing the disease burden and to highlight the best practices observed. The study revealed that, the use of long-lasting insecticide-treated nets and indoor residual spraying has resulted a decline in the incidence and prevalence of malaria in Sub-Saharan Africa. Other strategies such as larval source management have been shown to reduce mosquito density but require further evaluation. New methods under development such as house improvement have demonstrated to minimize disease burden but require further evidence on efficacy. Development of the RTS,S/AS01 (Mosquirix) malaria vaccine that provides protection in under-five children has provided further progress in efforts of malaria control.

Legesse, Tegegn, and Belachew (2020) conducted a cross-sectional study to assess the knowledge, attitude and practices about modes of malaria transmission and preventive methods. The study was conducted among thress urban areas of Assosa zone, Western Ethiopia from January to February, 2006. Data analysis was carried out using SPSS for windows version 12.0.1. Adjusted odds ratio and 95% confidence intervals were employed to test the strength of association. The study found that, sleeping under a mosquito net and eliminating mosquito-breeding sites were identified by 58% and 52% of respondents, respectively, as major malaria preventive measures.

Kajfasz (2019), conducted a study on malaria prevention. The study found that, no effective vaccine is currently available. Prevention of malaria encompasses measures that protect against infestation and against the development of plasmodia in infected subjects. Measures that protect against infestation are directed against the mosquito vector. These can be personal protective measures, e.g. protective clothing, repellents to the exposed skin, insecticide-impregnated bed nets, or environmental protection measures, e.g. use of insecticides. DEET-based and picaridin-based repellents have been shown to be most effective. DEET (diethyl-3-

methylbenzamide) remains the gold standard of chemical insect repellents; it is effective against various species of mosquitoes.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter talks about the study area, study population, study design, sampling techniques, data collection method and instrument, data analysis techniques, ethical consideration, and the limitations of the study.

3.1 Study area

The study was conducted at the Holy Family Hospital, Berekum. The hospital is a Christian Health Association of Ghana (CHAG) facility under the National Catholic Health Service (Catholic Diocese of Sunyani). The facility is located on the Biadan road, and 36.8km from Sunyani which serves as a Municipal Hospital. Due to the strategic location of the hospital, patients from other parts of Ghana and neighbouring countries like La Cote D'Ivoire visit the hospital. The hospital has a bed capacity of about 200 beds and provides services such as; inpatient (Paediatric, Males, Females, and Surgical) wards, outpatient, Reproductive and Child Health Clinic, Maternity and Labour and Emergency, Psychiatric unit, Eye clinic: Ear, Nose and Throat clinic, Dental clinic and Theatre. The post-Natal services are part of the Reproductive and child health department where care is provided for babies and mothers on five (5) working clinic days per week.

3.2 The study population

The target population for the study is all mothers of children admitted to the paediatric ward of Holy Family Hospital, Berekum and the accessible population is mothers of children under five years admitted to the pediatric ward of Holy Family Hospital, Berekum.

3.3 Study design

A descriptive cross-sectional survey was used in this study. This design was employed because children under five years have unique or different characteristics that need to be studied at a point in time. The design also paved way for data collection to be done at the same time from people who are similar on other characteristics but different on key factors of interest such as age, income source, income levels, or geographic location. A descriptive study was employed to describe objectively the nature of anaemia among pregnant women.

3.4 Sampling technique and size

A total of thirty (30) mothers of children under five years admitted to the paediatric ward with malaria were selected for the study. The respondents were obtained using the convenient sampling method. This method was used because it is inexpensive and respondents are easy to reach.

3.5 Data collection methods and instruments

Data collection was done through the use of structured questionnaires consisting of closed-ended questions for easy expression of views and ideas. This was chosen as the method of data collection because it is relatively cheaper, avoided embarrassment on the part of the respondents, and the complete anonymity of respondents. Questionnaires were shared with respondents at the ward. We explained to them how the questionnaires were to be filled. Each pregnant woman used a maximum of 20 minutes to complete the questionnaire.

3.6 Data analysis techniques

The data obtained from the study were checked for accuracy, utility, and completeness. Data were analysed using Microsoft Excel 2013 and results were presented in tables and figures.

3.7 Ethical consideration

An introductory letter was sent to the Management of the Holy Family Hospital, Berekum for approval to conduct the study. Participants were informed of the benefits, risks, purpose, and procedure of the study and their right to withdraw from the study at any point without penalty. All participants agreed voluntarily to be part of the study. Respondents were assured of anonymity and confidentiality by not providing any form of identification on the questionnaire. However, identification codes were used to represent the respondent according to their chronologic entry into the study.

3.8 Limitations of the study

The study was limited by the convenience sampling method that was used to select participants since not every participant had an equal and independent chance of being selected. Also, it was difficult to generalize our findings since a small sample size and one facility were used.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.0 Data Presentation & Analysis

This chapter deals with the analysis of data collected from the field of study and the results obtained from the analysis. The study findings are presented in tables or figures.

4.1 Demographic data of Respondents

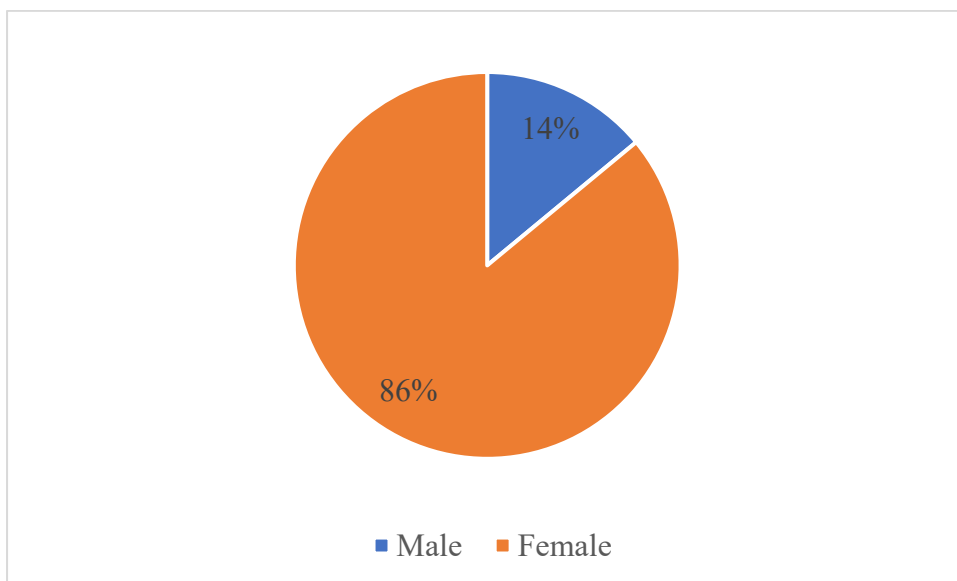


Figure 1: Gender of respondents

From figure 1, majority of the respondents 43(86%) were females while 7(14%) of the respondents were males.

Table 1: Age distribution of respondents

Variable	Categories	Frequency (n)	Percentage (%)
Ages	19-24 years	5	10
	25-30 years	27	54
	Above 30 years	18	36

From table 1, majority of the respondents 27(54%) were aged between 25-30 years, 13(36%) were aged above 30 years and only 5(10%) were aged between 19-24 years.

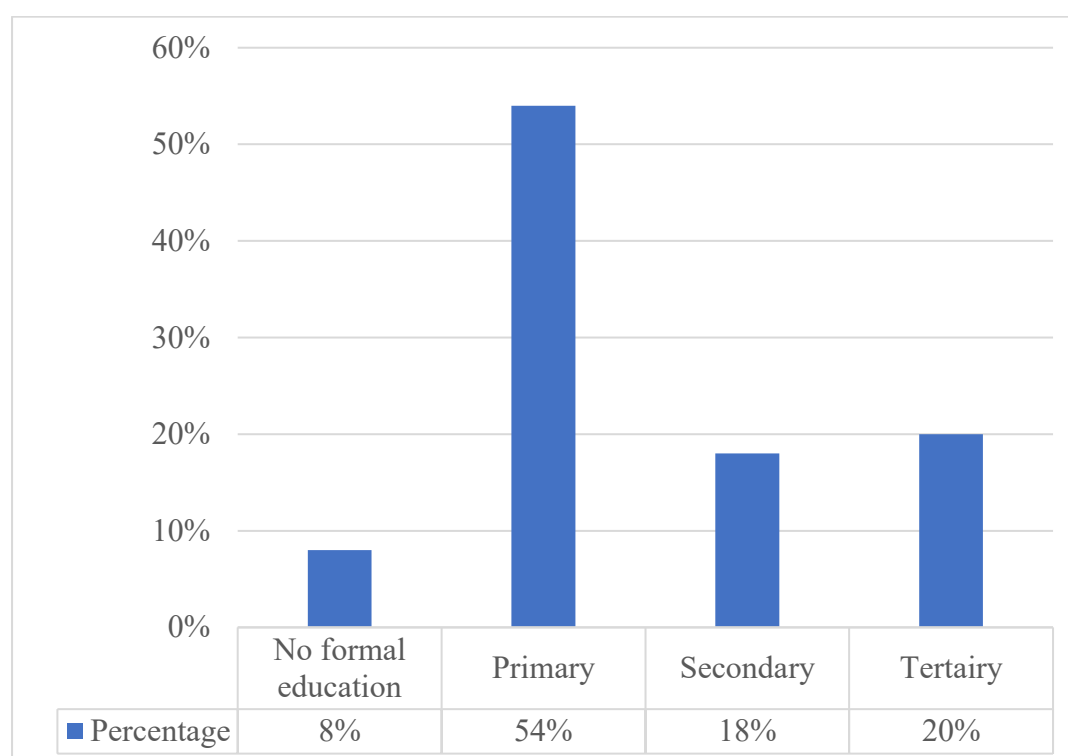


Figure 2: Respondents educational level

From figure 2, majority of the respondents 27(54%) were primary graduates, 10(20%) were tertiary graduates, 9(18%) were secondary school graduates and only 4(8%) had not attained any formal education.

Table 2: Respondent's number of children under five

Variable	Categories	Frequency (n)	Percentage (%)
Number of children under five	One	25	50
	Two	19	38
	Three or more	6	12

From table 2, half of the respondents 25(50%) have one child under five years, 19(38%) had 2 children under five years and 6(12%) of the respondents had 3 or more children under five years.

4.2 Knowledge of Malaria

Table 3: Respondents view on malaria

Variable	Categories	Frequency (n)	Percentage (%)
Have you heard of malaria before?	Yes	50	100
	No	0	0

From the table above, all the respondents 50(100%) have heard of malaria.

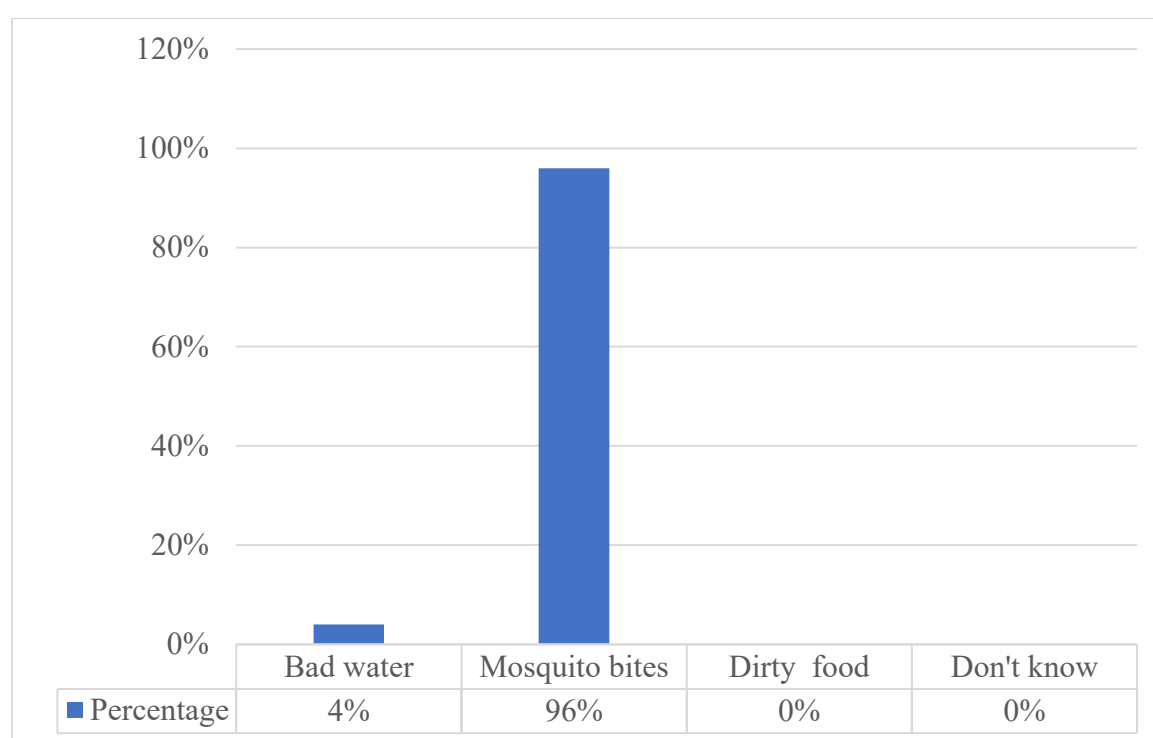


Figure 3: Causes of Malaria

From figure 3, majority of the respondents 48(96%) indicated the cause of malaria to mosquito bites, while only 2(4%) indicated bad water to be the cause of malaria. None of the respondents' attributes dirty food to be the cause of malaria.

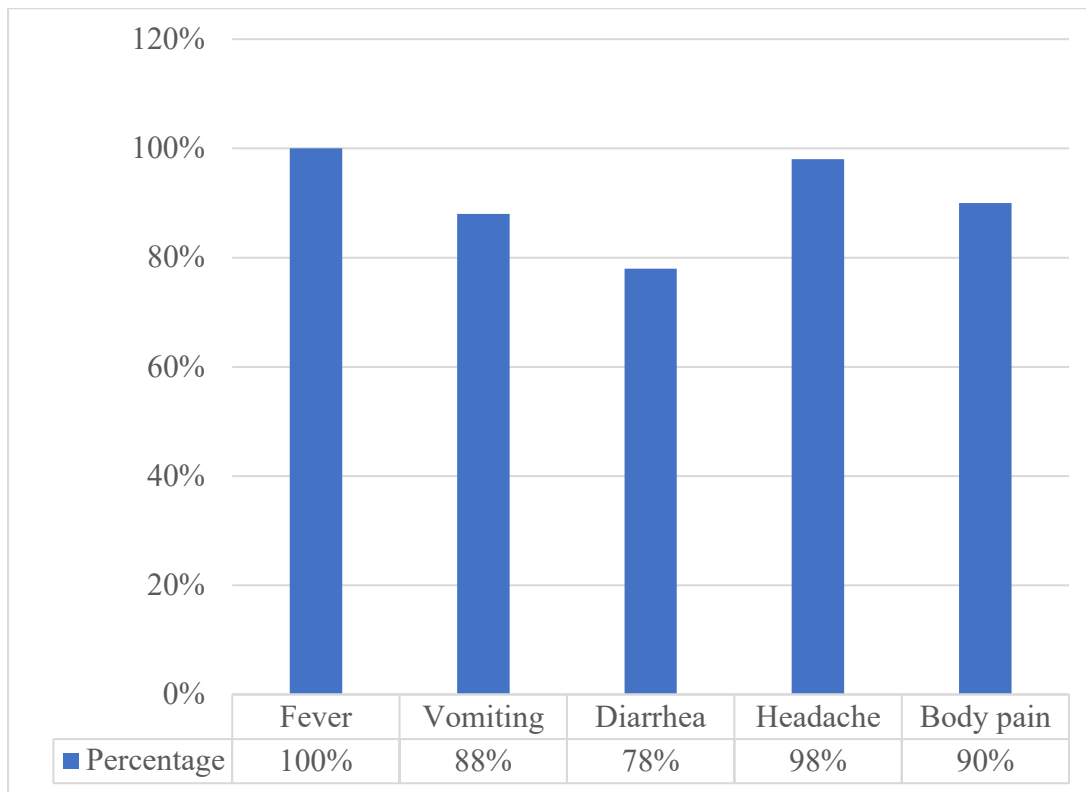


Figure 4: Common symptoms of malaria

The figure above represents respondents view on the common symptoms of malaria; fever 50(100%), vomiting 44(88%), diarrhea 39(78%), headache 49(98%) and body pains 45(90%).

Table 4: Malaria being deadly

Variable	Categories	Frequency (n)	Percentage (%)
Can malaria be deadly if not treated early?	Yes	50	100
	No	0	0

From the table above, all the respondents indicated the malaria can be deadly if not treated early.

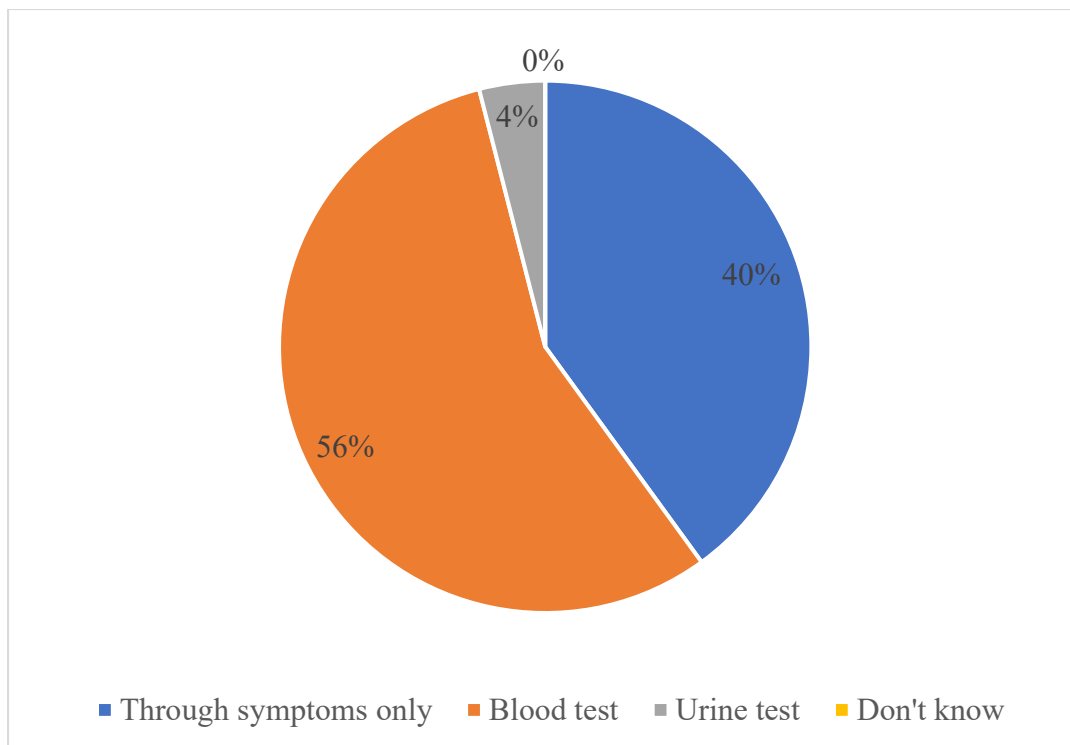


Figure 5: Diagnosis of malaria

From figure 5, majority of the respondents 28(56%) indicated that malaria can be diagnosed through blood test, 20(40%) indicated that malaria can only be diagnosed through symptoms and 2(4%) indicated malaria can be diagnosed through urine testing.

4.3 Environmental factors that contribute to high prevalence of malaria

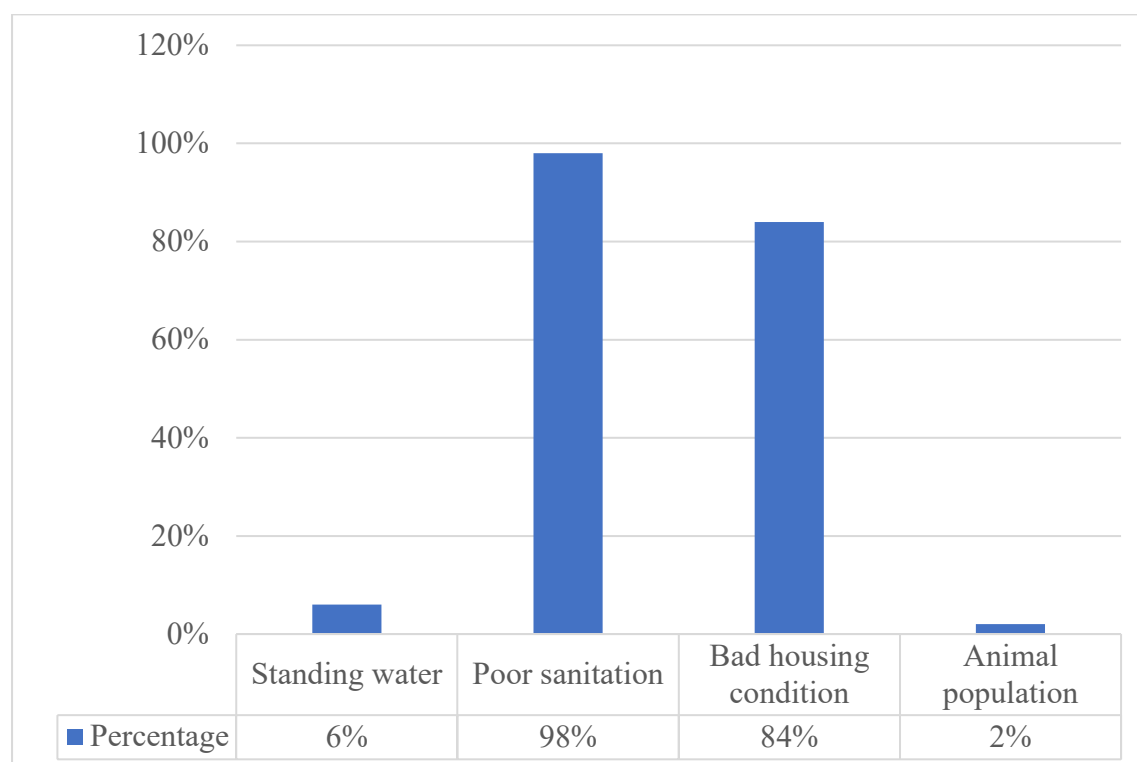


Figure 6: Environmental factors contributing to malaria

From figure 6, respondents were asked to indicate the environmental factors that contributes to malaria and these were their respondents; poor sanitation 49(98%), bad housing condition 41(84%), standing water 3(6%) and animal population 1(2%).

Table 5: Respondent's view on stagnant water

Variable	Categories	Frequency (n)	Percentage (%)
How often do you see stagnant water in your neighborhood?	Very often	24	48
	Sometimes	19	38
	Never	7	14

From the table above, majority of the respondents 24(48%) very often see stagnant water in their neighborhood, 19(38%) sometimes see and 7(14%) do not see stagnant water in their neighborhood.

Table 6: Report of frequent malaria cases.

Variable	Categories	Frequency (n)	Percentage (%)
Are there frequent cases of malaria reported in your community?	Yes	40	80
	No	10	20

Majority of the respondents 40(80%) indicated that, there have been frequent malaria cases reported in their community while a few 10(20%) indicated No to this assertion.

4.4 Preventive Measures of Malaria

Table 7: Awareness on malaria prevention.

Variable	Categories	Frequency (n)	Percentage (%)
Are you aware of any preventive measures against malaria?	Yes	49	98
	No	1	2

The above table indicates that, majority of the respondents 49(98%) are aware of the measures to prevent malaria while 1(2%) were not aware.

Respondents indicated that the preventive measure of malaria includes; sleeping in mosquito treated net 50(100%), use of mosquito repellents 44(88%), avoiding outdoor exposure at night 35(70%), wearing of protective clothing 25(50%) and spraying the room with insecticide spray 40(80%).

Table 8: Respondents view on malaria prevention

Variable	Categories	Frequency (n)	Percentage (%)
Have you taken any preventive measures for your child against malaria?	Yes	50	100
	No	0	0

From table 8, all the respondents 50(100%) have taken measures for their children against malaria.

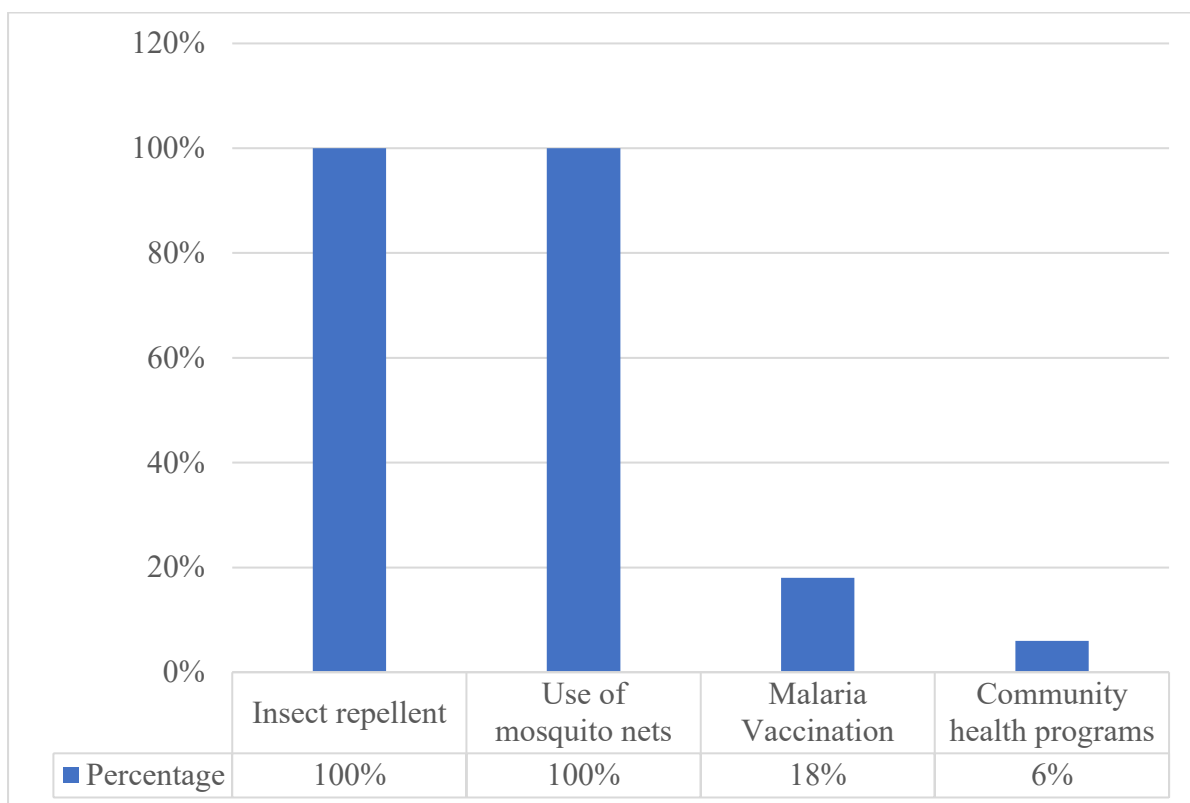


Figure 7: Measures taken to prevent malaria

From figure 7, respondents were asked the measures taken to prevent malaria, these were the responses given; insect repellent 50(100%), use of mosquito nets 50(100%), malaria vaccination 9(18%) and community health programs 3(6%).

Table 9: Frequency of mosquito net use

Variable	Categories	Frequency (n)	Percentage (%)
How often do you use mosquito nets for your child?	Always	50	100
	Sometimes	0	0
	Never	0	0

From the table above, all the respondents 50(100%) use mosquito nets for their children.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter provides an in-depth look at the major findings that emerged out of the research, comparison of the analyzed data with findings from other literature, conclusion, and recommendations.

5.1 Discussions

5.1.1 Knowledge of malaria

All the respondents 50(100%) have heard of malaria. This finding is in line with the study conducted by Wombo et al., (2023). It was found that, 98.6% of mothers had heard of malaria and 55.5% had heard of severe malaria.

Majority of the respondents 48(96%) indicated the cause of malaria to mosquito bites.

Respondents view on the common symptoms of malaria included; fever 50(100%), vomiting 44(88%), diarrhea 39(78%), headache 49(98%) and body pains 45(90%). All the respondents indicated the malaria can be deadly if not treated early. Majority of the respondents 28(56%) indicated that malaria can be diagnosed through blood test, 20(40%) indicated that malaria can only be diagnosed through symptoms and 4% indicated malaria can be diagnosed through urine testing. These findings indicate that, respondents have a high knowledge on the cause, and diagnosed of malaria. These findings are in line with a study conducted by Adum et al., (2023). They revealed that, the majority of participants have a high level of knowledge about malaria, including its causes, signs and symptoms. It was therefore concluded that, majority of mothers were knowledgeable about the causes, signs and symptoms, and preventive measures of malaria in children under the age of five.

Again Oreagba, et al., (2004) conducted a study which contradicts this current study. The study concluded that, the caregivers of children in the communities studied have poor knowledge of malaria.

5.1.2 Environmental factors that contribute to high prevalence of malaria

Respondents were asked to indicate the environmental factors that contributes to malaria and these were their respondents; poor sanitation 49(98%), bad housing condition 42(84%), standing water 3(6%) and animal population 1(2%). Majority of the respondents 24(48%) very often see stagnant water in their neighborhood. Stagnant water breed mosquitos which can malaria. These findings are in line with a study conducted by Nkuo-Akenji, Ntonifor, and Ndukum (2017). It was found in their study that, inhabitants of houses surrounded by bushes or garbage heaps and swamps or stagnant water showed higher malaria parasite prevalence and densities compared with those from cleaner surroundings.

Again Dale, et al. (2018), conducted a search which is also in line with this current study. It was found that the physical factors, which are generally important for malaria, included rainfall, mosquito breeding and resting sites, their distance from human habitation, and elevation, though the latter was not statistically significant. Housing conditions were occasionally important factors contributing to malaria.

5.1.3 Preventive measures of malaria

Majority of the respondents 49(98%) are aware of the measures to prevent malaria. Respondents indicated that the preventive measure of malaria includes; sleeping in mosquito treated net 50(100%), use of mosquito repellents 44(88%), avoiding outdoor exposure at night 35(70%), wearing of protective clothing 25(50%) and spraying the room with insecticide spray 40(80%), malaria vaccination 9(18%) and community health programs 3(6%). These findings are in line with a stud conducted by Tizifa and Kabaghe (2018). It

revealed in their study that, the use of long-lasting insecticide-treated nets and indoor residual spraying has resulted a decline in the incidence and prevalence of malaria in Sub-Saharan Africa. Again, Legesse, Tegegn, and Belachew (2020) also found that, sleeping under a mosquito net and eliminating mosquito-breeding sites were identified by 58% and 52% of respondents, respectively, as major malaria preventive measures.

5.2 Conclusion

The following conclusions were drawn from the study;

1. Respondents had a good/high knowledge about malaria.
2. Environmental factors that contribute to malaria and these were their respondents; poor sanitation 49(98%), bad housing condition 42(84%), standing water 3(6%) and animal population 1(2%).
3. Majority of the respondents 24(48%) very often see stagnant water in their neighbourhood.
4. The preventive measure of malaria includes; sleeping in mosquito treated net 50(100%), use of mosquito repellents 44(88%), avoiding outdoor exposure at night 35(70%), wearing of protective clothing 25(50%) and spraying the room with insecticide spray 40(80%).

5.3 Recommendations

Based on the findings of the study, the following recommendations are made.

1. Mothers should be entreated to sleep in mosquito treated net with their children.
2. Mothers should be educated about the benefits of early malaria treatment and complications for late treatments.
3. Mothers should be educated on the effective preventive measures of malaria.

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APPENDICE

QUESTIONNAIRE

HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM

Dear Respondent,

We are final year students of the Holy Family Nursing and Midwifery Training College, Berekum, conducting a study on the topic: factors that contribute to high prevalence of malaria among children under five years who are on admission at Holy Family Hospital, Berekum Pediatric ward.

Any information provided shall be secured and kept private. To ensure confidentiality and anonymity, your name is not required. Participation is voluntary and you have the sole right to withdraw from participating in this study at any time at your discretion.

PLEASE TICK [✓] THE MOST APPROPRIATE RESPONSE TO THE QUESTION IN THE SPACE PROVIDED AND/OR WRITE IN THE SPACE PROVIDED

SECTION A: Respondent Demographic Data

1. Gender: A. Male [] B. Female []
2. Ages: A. 19-24 years [] B. 25-30 years [] C. Above 30 years []
3. Educational level:
 - A. No formal education []
 - B. Primary []
 - C. Secondary []
 - D. Tertiary []
4. Number of children under five:
 - A. One []
 - B. Two []

C. Three or more ☐

Section B: Knowledge of Malaria

5. Have you heard of malaria before?

A. Yes ☐ B. No ☐

6. What is the cause of malaria?

A. Bad water ☐

B. Mosquito bites ☐

C. Dirty food ☐

D. Don't know ☐

7. What are the common symptoms of malaria in children? (Select all that apply)

A. Fever ☐

B. Vomiting ☐

C. Diarrhea ☐

D. Headache ☐

E. Body pain ☐

F. Don't know ☐

8. Can malaria be deadly if not treated early?

A. Yes ☐

B. No ☐

C. Don't know ☐

9. How is malaria diagnosed in children?

A. Through symptoms only ☐

B. Blood test ☐

C. Urine test ☐

D. Don't know ☐

Section C: Environmental factors that contribute to high prevalence of malaria

11. In your opinion, which environmental factors contribute to malaria transmission? (Select all that apply)

- A. Standing water ☐
- B. Poor sanitation ☐
- C. Bad housing conditions ☐
- D. Animal populations ☐
- E. Other (Please specify):

12. How often do you see stagnant water in your neighbourhood?

- A. Very often ☐
- B. Sometimes ☐
- C. Never ☐

13. Are there frequent cases of malaria reported in your community?

- A. Yes ☐
- B. No ☐

Section 4: Preventive Measures of Malaria

14. Are you aware of any preventive measures against malaria?

- A. Yes ☐
- B. No ☐

15. If yes, please list the preventive measures you know:

.....
.....

16. Have you taken any preventive measures for your child against malaria?

A. Yes [] B. No []

17. If yes, please specify the measures taken: (Select all that apply)

A. Insect repellent []

B. Use of mosquito nets []

C. Malaria vaccination (if available) []

D. Community health programs []

E. Other (Please specify):

18. How often do you use mosquito nets for your child?

A. Always [] B. Sometimes [] C. Never []

NATIONAL CATHOLIC HEALTH SERVICE (DIOCESE OF SUNYANI)
HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE
BEREKUM



BANKERS:

Ghana Commercial Bank, Berekum
Agric Development Bank, Berekum
Fidelity Bank, Berekum



P. O. Box 21,
Berekum, B/A
Ghana, W/Africa
Tel. 0352222124
Fax: 0352222474

Our Ref.

Your Ref.

Date 19th Feb 2008

The Nursing Administrator
Holy Family Hospital
Berekum, Bono Region

Dear Administrator

PERMISSION TO CONDUCT RESEARCH

I wish to introduce to you the under listed names of final-year students of the College:

1. Evans Asante
2. Freda Arthur

As part of the pre-requisite for the award of Diploma in Nursing, they are to conduct a research study on the topic "Assessing the Factors that contributes to high prevalence of Malaria among Children under five years who are on admission at the Holy Family Hospital, Berekum."

I would be grateful if you could assist them with any material or help they may need to accomplish the task.

Thank you.

Yours faithfully

Mr. Isaac Asante Kwarko
Supervisor
For: Principal

Yours faithfully

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