

**SCHOOL OF PUBLIC HEALTH  
COLLEGE OF HEALTH SCIENCES  
UNIVERSITY OF GHANA**



**FACTORS ASSOCIATED WITH THE USE OF HERBAL MEDICINE AMONG  
PREGNANT WOMEN IN THE NKWANTA NORTH AND SOUTH DISTRICTS  
OF OTI REGION, GHANA.**

**BY  
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**DECLARATION**

I, Acquah Mark hereby declare that this dissertation is a result of my independent work. References to other works have been duly acknowledged. I further declare that this dissertation has not been submitted for award for any degree in this institution and other universities elsewhere.

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**DATE.....**

**DEDICATION**

I dedicate this whole work to Almighty God, my dearest daughter Anne Ewurama Nyameye Acquah, my lovely wife Mrs. Rhoda Agyabemaa Acquah and those who contributed in many diverse ways in making this research a successful one.

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## ABSTRACT

**Introduction:** Herbs have been used as an alternate form of treatment amidst the advent of orthodox therapies for health care. Herbs have been used as wellspring of potent remedies and have become an intrinsic part of various autochthonous cultures around the world.

The World Health Organization (WHO) estimates that about eighty percent (80%) of rural populations residing in developing countries rely on herbal medicines for their health needs including its use during pregnancy.

Studies carried out on herbal medicine utilization in pregnancy across different parts of the world show varying prevalence of herbal medicine consumption during pregnancy.

**Objectives:** The main objective of this research was to determine the prevalence of herbal medicine use and the factors associated with usage among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana.

**Methods:** This current study was conducted in two districts; Nkwanta North and Nkwanta South in the Oti Region. This study employed a descriptive cross-sectional study. Data collection was done through one and one interview using a semi-structured questionnaire on 433 pregnant women. It was done simultaneously in selected districts during ANC visit to Child Welfare Clinic (CWCs) days. In determining the association between pregnant women's herbal medicine consumption and other independent variables a chi-square test was used. Logistic regressions, thus adjusted and unadjusted logistics which establishes the strength of associations were used to determine factors associated with the use of herbal medicine among pregnant women. STATA 15 was used for analysis. A p-value  $<0.05$  was considered as statistically significant at confidence interval of 95%.

**Result:** The study found that slightly more than half (51.5%) of the pregnant women were aged 20-29 years and majority (88.7%) of the pregnant women were married and 9.5% were single. Most (72.8%) of the pregnant women had no formal education. The study found that (70%) of the pregnant women have ever used herbal medicine and slightly (61.4%) of pregnant women were using herbal medicine at the time of data collection. The Chi-square test established the significant association between religion and use of herbal medicine ( $p= 0.001$ ). There was a significant association between parity and use of herbal medicine ( $p=0.014$ ).

**Conclusion:** The herbal medicine use amongst pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana was high (61.4%), Six out of every 10 pregnant women used herbal medicine when pregnant. The unknown safe state of the herbal medicine makes its use life-threatening to the pregnant women and the unborn baby. The district health directorate together with the health staffs especially midwives and nurses should intensify education pertaining to the effect of herbal medicine use during pregnancy.

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## **LIST OF ABBREVIATION**

ANC	Antenatal Care
ANCs	Antenatal Clinics
CWCs	Child Welfare Clinics
CPMR	Centre for Plant Medicine Research
GHS	Ghana Health Service
GSS	Ghana Statistical Service
HBM	Health Belief Model
HUM	Health Utilization Model
WHO	World Health Organization

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Herbs have been used as an alternate form of treatment amidst the advent of orthodox therapies for health care. Herbs have been used as wellspring of potent remedies and have become an intrinsic part of various autochthonic cultures around the world (Olowokere & Olajide, 2013). Although orthodox medicine has been used as primary source of healthcare, herbal medicines has not been entirely abandoned globally. (Olowokere & Olajide, 2013).

Rather, utilization of herbal medicine is gaining more recognition in both developing and industrialized countries, particularly in areas where orthodox medicine is either unaffordable, unavailable or both (Nyeko, Tumwesigye, & Halage, 2016; Olowokere & Olajide, 2013).

Plant-based materials and preparations believed to have curative advantages are been described as herbal medicine (Nikolajsen et al., 2011). They may exist as unprocessed or processed mixtures from more than one plants and may involve herbal preparations, herbs materials and processed herbal products (Nikolajsen et al., 2011). Also, they may have aspects of plant materials as the actual substances (Nyeko et al., 2016; World Health Organization, 2018a)

The World Health Organization estimates that about eighty percent of rural populations residing in developing countries rely on herbal medicines for their health related issues or needs among its consumption during pregnancy (World Health Organization, 2018b). Although, modern antenatal care is common in both developing and developed countries, some pregnant women still resort to traditional medicines to facilitate child birth, secure

good foetal growth and development (Dove, 2010).. Studies carried out on herbal medicine utilization in pregnancy across different parts of the world show varying prevalence of herbal medicine consumption during pregnancy (Ahmed, Hwang, Hasan, & Han, 2018; Hwang et al., 2016; Nyeko et al., 2016).

A study in Bangladesh on herbal medicine usage reported that 70% of women who are pregnant had at least ever consumed one modality of herbal preparation or medication when they were pregnant (Ahmed et al., 2018). It was also reported among Iraqi women that, 56.7% of them used some form of herbal medication when they were pregnant (Hwang et al., 2016). The same findings were also reported on the African continent. Research conducted on prevalence of herbal medicine utilization, and factors associated to it, amongst females who were pregnant in Ethiopia reported 48.5% of respondents who are currently pregnant used herbal medicine (Mekuria, Erku, Gebresillassie, & Birru, 2017). A reported prevalence of 20% was reported in Uganda. (Nyeko et al., 2016). In West Africa, a study on sociological and demographic determinants of herbal medicine consumption in pregnancy state 38.6% of study participants utilized some form of herbal medicine while pregnant. In that study, bitter leaf/ iron weed was the most common used herb (Duru, Uwakwe, Chinomnso, Mbachii, & Diwe, 2016). Similarly, in Sierra Leone a herbal medicine usage of 62.7% was reported among pregnant women (Bai, Jawo, Tommy, Wardle, & Steel, 2017).

An empirical evidence shows that pregnant women use herbal medicines for various reasons (John & Shankakumari, 2014). During pregnancy, it is documented that herbal medicines are been used for pregnancy related maladies especially vomiting and nausea, labour enhancement or for unrelated pregnancy conditions such as cold, skin problems and respiratory illnesses (Mekuria et al., 2017; Olowokere & Olajide, 2013). Furthermore, other reasons given by women who are pregnant for herbal medicines use during

pregnancy include reduction of risk of preeclampsia, shorten labour and the treatment of urinary tract infections (Laelago, 2018). It is reported that high utilization of herbal medicines during pregnancy may be due to the availability, affordability, acceptability and accessibility of herbal medicines among high populations of developing countries (Duru et al., 2016). Various herbal ingredients are used in the herbal preparations taken during pregnancy. However, the most commonly used herbs include ginger, garlic, bitter kola, peppermint and bitter leaf/iron weed plant (Duru et al., 2016; Laelago, 2018; Mekuria et al., 2017; Mothupi, 2014).

Herbal medicines have become a catholicon for many ailments among many women who are pregnant in rural areas around the world (Dove, 2010).. However, concerns have been raised in relation to the safety of these pregnant women and the assertion that some of these herbal medicines may be toxic and have teratogenic potentials and may increase the risk of foeto-maternal complications associated with pregnancy (Olowokere & Olajide, 2013). To this end, research have been carried out on perceived safety and effects of using herbal medicines on pregnancy outcomes (Laelago, 2018; Thomas, Bandara, Lee, Driedger, & Acharya, 2011). A study on unfavorable effects of herbal medicine consumption during pregnancy reported heartburns, pre-mature labour, abortion and miscarriage as common reactions and troubles when utilizing herbal medicine during pregnancy (Laelago, 2018). The research further reported using herbal medicine during the first and last three months (first and third trimesters respectively) of pregnancy was unsafe for foetal growth and development (Laelago, 2018). Furthermore, excessive use of ginger and bitter cola during pregnancy have been documented to have adverse effects on pregnancy outcome. Ginger and bitter cola consumed in high doses of more than 1000 milligrams has a potential abortifacient effect on the foetus (Pharmaceutical & Society of Australia, 2012; Thomas et al., 2011).

Various factors have been reported to be influenced the consumption of herbal medicines in pregnancy. The factors are diverse in nature and transcend beyond health to include level of education, health insurance coverage, socio-economic status and personal perceptions and beliefs about herbal medicines (Frawley et al., 2013; Pallivalapilla, Stewart, Shetty, Pande, & Mclay, 2013; Steel, Adams, Sibbritt, & Broom, 2015; Steel et al., 2014).

In Ghana, the consumption of herbal medicines has been documented for the pre-colonial era when there was scarcity of orthodox medicine (Adusi-Poku et al., 2015). To this end, the government instituted a research Centre called Centre for Plant Medicine Research (CPMR) with satellite units to embark on study and development of herbal medicine. The Centre also seeks to evaluate and ratify the long-term safety, efficacy and clinically monitor herbal medicines in Ghana (Centre for Plant Medicine Research, 2014). Although herbal medicine use is prevalent in the country, few researches have been carried out on its utilization amongst pregnant women (Boadu & Alex, 2017). A study conducted in Northern Ghana on herbal medicine usage before and during pregnancy reported that 43.5 % of respondents agreed they had used herbal medicines before while a little more than half (52.7%) stated they used herbal medicines while they were pregnant. The same study indicated that 23 different raw plant materials were used as herbal medicines with leaves and roots reported as the most plant parts consumed in preparing the herbal medicines (Ameade, Zakaria, Abubakar, & Sandow, 2018). However, another study conducted in Offinso on the kind of herbal medicinal consumed by women who are pregnant, visiting Antenatal Clinic reported a lower prevalence of 6.5%. The study further stated respondents mentioned they used herbal drugs to assist in delivery and labour easily as well as to improve foetal outcomes (Adusi-Poku et al., 2015). In the Ghanaian health system, antenatal care is free. Amidst this, pregnant women still resort to herbal medicines for

favorable foetal outcomes. There is anecdotal information concerning the herbal medicines utilization during pregnancy which has been the common practice in the Nkwanta North and South Districts of Ghana (Ameade, Zakaria, Abubakar & Snadow, 2018). However, there is no documentation of this practice.

## **1.2 Problem statement**

Herbal medicine is patronized by some women during pregnancy although little is known about its safety (Nyeko, Tumwesigye, & Halage, 2016). Utilization of herbal medicines amongst women who are pregnant is of public health important. This is because these medicines are taken purposely as merely for signs and symptoms associated with gestation such as nausea and vomiting which are known to be symptoms associated with pregnancy requiring no medicines to treat (Abdollahi, Khani, & Charati, 2018; Broussard, Louik, Honein, & Mitchell, 2010).

However, some researches have documented that women who use herbal medicines when they are pregnant demonstrate positive attitude towards herbal products. These women who are pregnant believe herbal medicines are more effective and safer as compared to orthodox medicines (Kim Sooi & Lean, 2013; Lapi et al., 2010). It has been reported that, some herbs are useful when use during pregnancy. Two separate studies conducted by Willetts and Vutyavanich revealed that women who utilized ginger when pregnant had a significant reduction in morning sickness, episodes in pregnancy (Vutyavanich, Kraissarin, & Ruangsri, 2001; Willetts, Ekangaki, & Eden, 2003).

On the contrary, some herbs have also been identified to have negative effects on the foetus resulting in unfavorable birth outcomes. For example, a study conducted by Facchinett showed that the consumption of almond oil in pregnancy significantly proliferated the risk of preterm delivery. The same study reported consuming chamomile in pregnancy

increased the risk of birth weight below 2.5kg in infants (Facchinetti et al., 2012). Furthermore, some herbs such as papaya and motherwort are contraindicated during pregnancy. This is because such herbs have been identified to be associated with foetal malformations (Kennedy, Lupattelli, Koren, & Nordeng, 2016). To this end, the World Health Organization recommends that, during pregnancy vitamin and mineral supplements should be consumed compared to herbal medicine. World Health Organization further recommends women to take folic acids and iron supplements when they are pregnancy to minimize the danger of adverse birth outcomes such as birth weight babies below 2.5kg, preterm deliveries and anaemia in pregnancy (World Health Organization, 2013). Amidst these global recommendations, some pregnant women still use these herbal products under no regulation to their detriment and that of their unborn infants (Adusi-Poku et al., 2015; Ameade, Zakaria, Abubakar, & Sandow, 2018). There are claims that, there is a higher patronage in herbal drugs consumption amongst females who are pregnant in the Nkwanta North and South Districts. However, there is no empirical evidence to support this claim.

### **1.3 Justification**

In Ghanaian settings, giving birth to a child is considered as one of the most significant events in the lives of families particularly that of women. However, it turns into an anticlimax for most families if the newborn child has congenital malformation. These congenital malformations may be due to various factors. However, there is documented evidence that drugs taken prior to and during pregnancy accounts for about 10% of birth defects such as cranial abnormalities, Intra uterine growth restriction and facial anomalies (Nama & Shehata, 2012). Hormonal changes during pregnancies results in various signs and symptoms such as headaches, vomiting, nausea and lower abdominal cramps makes living uncomfortable for most pregnant women (Jarvis & Nelson-Piercy, 2011; Sepra et

al., 2016). To this end, some women must use medicines to help them cope with these signs and symptoms. Women in developing countries where about 80% of the population use herbal preparations for healthcare use herbal products for the management of these pregnancy symptoms (Mensah & Gyasi, 2012; Sepra et al., 2016). Furthermore, there are assertions that herbal medicines prepared from natural sources are harmless and pose minimal risks thus some pregnant women find them safer to use than orthodox medicines (Bayisa, Tatiparthi, & Mulisa, 2014; Mensah & Gyasi, 2012).

The herbal medicine consumption during pregnancy in Ghana has been documented in studies in northern Ghana (Ameade et al., 2018) and the Ashanti Region (Adusi-Poku et al., 2015).. However, little is known about the prevalence, perceived side effects and factors which are associated with the use of herbal medicine in the Nkwanta North and South Districts in the Oti Region, Ghana. Thus, this presents the opportunity to conduct research to provide accurate and up-to-date information on utilization of herbal medicine amongst women who are pregnant in the Nkwanta North and South Districts. The outcome from this research will help develop interventions targeted at addressing pregnancy conditions that can be solved with scientifically proven and medically approved means rather than unregulated use of herbal medicines.

## **1.4 Aim and objectives**

### **1.4.1 Aim of the study**

To determine prevalence of herbal medicine use and the factors associated with usage among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana.

### **1.4.2 Objectives of the study**

- To determine the prevalence of herbal medicine use among pregnant women in the Nkwanta North and South Districts, Ghana.

- To describe perceived benefits and adverse effects of the herbal medicine on pregnancy outcome.
- To determine factors associated with the use of herbal medicine among pregnant women in the Nkwanta North and South Districts, Ghana.

### **1.5 Research questions**

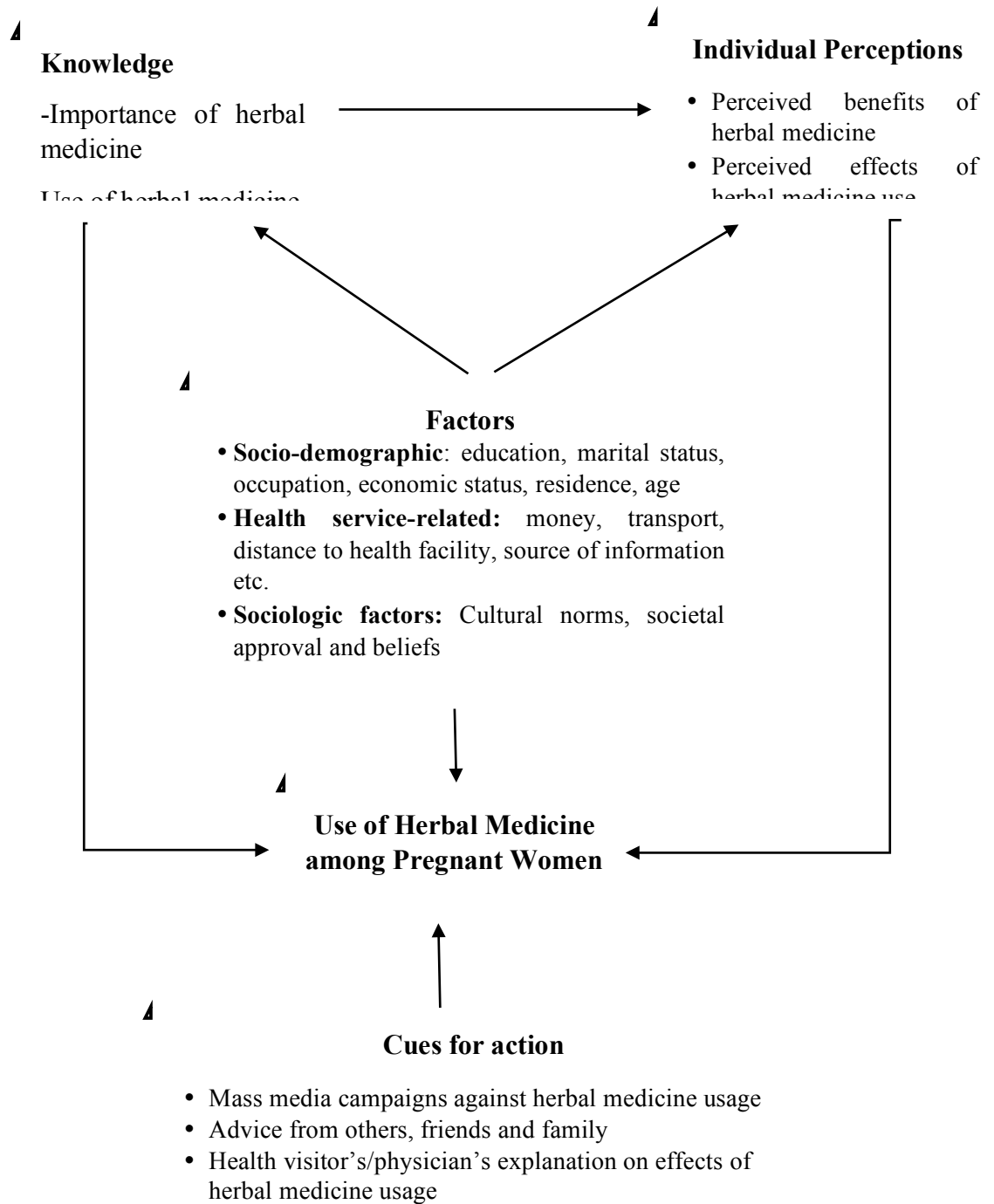
- What is the prevalence of herbal medicine use among pregnant women in the Nkwanta North and South Districts, Ghana?
- What are the perceived benefits and adverse effects of the use of herbal medicine on pregnancy outcomes?
- What factors are associated with the use of herbal medicine among pregnant women in the Nkwanta North and South Districts, Ghana?

### **1.6 Conceptual framework**

This research adapts the Healthcare Utilization Model (HUM) and the Health Belief Model (HBM) as the conceptual framework. This is in recognition of the fact that the model has tenets which are relevant to the study and well-suited with the research objectives; to determine the prevalence of herbal medicine usage among pregnant women, type and reason of herbal medicine usage among pregnant women, examine the adverse effects of use of herbal medicine on pregnancy outcomes and determine factors associated with the use of herbal medicine among pregnant women.

These two models were adapted because the pregnant woman's perceptions about the consumption of herbal medicines in pregnancy are posited by the Health Belief Model. The perceived benefits of herbal medicine may influence the usage even though there may arise some perceived effects (barriers) of pregnancy outcomes after using the herbal

medicine. Both the HBM and HUM recognize the role of knowledge associating with the consumption of herbal medication during pregnancy. Knowledge concerning the benefits and the herbal medicinal use and the importance to improve fetal growth may influence the usage. The current study also seeks to explore the factors associated with the use of herbal medicine amongst pregnant women which the HUM, groups into three; socio-demographic (predisposing) factors, health service-related (enabling) factors, and sociologic (reinforcing) factors. The cues to action from the HBM are also relevant to the factors contributing to the consumption of herbal drug during pregnancy. Mass media campaigns about herbal medicine, advice from other members of the community. Also, health visitors or a physician's explanation in rendering services influenced the consumption of herbal medicine during pregnancy (Figure 1).



**Figure 1: Conceptual Framework**

Source: Adapted from Current Nursing (2012) and Andersen and Newman (2005)

## CHAPTER TWO

### LITERATURE REVIEW

#### **2.1 Introduction**

According to World Health Organization (WHO) traditional medicine is best described as “health practices and approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses and maintain well-being (Mekuria, Erku, Gebresillassie, Birru, Tizazu, & Ahmedin, 2017). Herbal medicines utilization among pregnant women are mainly for different reasons including ailments which are either related to pregnancy such as for instance morning sickness episode, enhancing labour or reasons unrelated to pregnancy and ailment like cold, respiratory illnesses and skin diseases as well as nutritional benefit (Titilayo, Rasaan, & Ismail, 2009). This section of the chapter seeks to discuss findings obtained from relevant research carried out to determine the prevalence of herbal medicine use and the factors associated with the usage among pregnant women. The area of focus to be discussed are; prevalence of herbal medicine usage among pregnant women, type and reason of herbal medicine usage amongst women who are pregnant, adverse effects of use of herbal medicine on pregnancy outcomes and factors associated with the use of herbal medicine among pregnant women.

#### **2.2 Prevalence of herbal medicine usage among pregnant women**

A research targeted at determining the prevalence of herbal medicinal consumption amongst pregnant women visiting a tertiary hospital in Northern Nigeria discovered that, 31.4% of the females who were pregnant consume herbal drugs in their subsisting pregnancy (Tamuno, Omole-Ohonsi, & Fadare, 2010). A facility based cross sectional

research carried out amongst pregnant women visiting Antenatal Clinics (ANC) at University of Gondar referral and teaching hospital, Northwest Ethiopia showed that, 48.6% of the women who were pregnant were currently using herbal medicine (Mekuria et al., 2017). A descriptive cross sectional research carried out amongst mothers visiting postnatal care services in four sites in Gulu district discovered that, the prevalence of consumption of herbal drugs during the current pregnancy was 20% (Nyeko, Tumwesigye, & Halage, 2016). Another institutional based cross sectional research carried out among pregnant women visiting antenatal clinic showed that, 73.1% of women who were pregnant used herbal medicine during pregnancy (Laelago, Yohannes, & Lemango, 2016). A cross sectional research conducted to fine out the prevalence of herbal use amongst pregnant females disclosed that, the use of herbal medicine raised from 22.7% before pregnancy to 48.4% during pregnancy (Abdollahi, Khani, & Charati, 2018). A research targeted to ascertain the prevalence of herbal medicine consumption in Tanzania showed that, only 23.0% used herbal medicine (Dika, Dismas, Iddi, & Rumanyika, 2017). A research conducted to evaluate the utilization of herbal medication amongst women who are pregnant in Tamale, Northern Ghana disclosed that, 52.7% women consumed herbal medicine when they were pregnant (Ameade, Zakaria, Abubakar, & Sandow. 2018). A multinational research aimed to find out the prevalence of consumption of herbal medicine in pregnancy discovered that, slightly (28.9%) reported the herbal medicine usage in pregnancy (Kennedy, Lupattelli, Koren, & Nordeng, 2013). The prevalence of usage of herbal medicine differs from one geographical area to another resulting in high and low prevalence.

### **2.3 Type and reason of herbal medicine usage among pregnant women**

The findings of the study carried out by Mekuria and colleagues indicated that garlic and ginger were the commonly use herbs among the pregnant women studied. The reason for the use of the herbs was common cold and inflammation (Mekuria et al., 2017). The results of a study carried out also showed that, herbal medicine were utilized for several reasons including to ease signs and symptoms for example fever, abdominal and waist pains as well as nausea and vomiting (Nyeko et al., 2016). The herbal medicine frequently consumed during the current pregnancy in the study carried out by Laelago and colleagues in Ethiopia were garlic, ginger, tenaadam, damakasse and eucalyptus (Laelago et al., 2016). Sour orange (30.76%) and peppermint (22.0%) were the most frequently reported herbs applied in most cases throughout pregnancy. Mostly, the common reason for utilizing the herbs were to enhance health and intelligence of the fetal (Abdollahi et al., 2018). A study done in Northern Ghana showed that, the leaves of the raw plant were the most used parts for the herbal medicine (Ameade et al., 2018). The most frequently herbs consumed in pregnancy were ginger, cranberry, valerian and raspberry. Most herbs were also consumed for pregnancy related health issues for example cold and morning sickness (Kennedy et al., 2013). The use of garlic and ginger as herbal medicines are the most commonly use among pregnant women.

### **2.4 Adverse effects of use of herbal medicine on pregnancy outcomes**

Herbal medicine and it usage during pregnancy usually causes troubles. There are commonly conditions which are been influenced by herbal medicine utilization when women are pregnant such as heartburn, preterm labour, miscarriages and abortions, blood flow increment, and allergic reactions (Laelago, 2018). An unmatched case control study carried out to evaluate the significant of herbal medicine use on birth outcomes showed

that, significantly, precipitated labour was associated with the consumption of traditional medicine (Tinashe, Miriam, & Auxillia, 2016). A cross sectional analysis of secondary data of a household in rural Malawi revealed that, those who utilize herbal medicine had an increased reported occurrences of maternal mortality or morbid and neonatal mortalities or morbid (Zamewe, King, Jennings, & Fottrell, 2018).

## **2.5 Factors associated with the use of herbal medicine among pregnant women**

The herbal medicine utilization and its associated factors amongst pregnant women visiting tertiary hospital in a research carried out in Northern Nigeria found that, significantly, there was an association between the herbal drug utilization and no formal education, less economic status, self-medication with conventional medicine (Tamuno et al., 2010). The predictors influencing the consumption of herbal medicine in the research conducted amongst pregnant women visiting antenatal care in the University of Gondar referral and teaching hospital, northwest Ethiopia were rural residence, illiteracy and monthly average income less than 100 USD (Mekuria et al., 2017). A cross sectional study carried out in Kenya discovered that, factors associated between the consumption of herbal medicine amongst women who are pregnant were being married and older, less economic status, being low educated and severity of morning sickness episode (Mothupi, 2014). Significantly, the factors associated between the herbal drugs consumption when women are pregnant was perception and believe that herbal medicine is effective and safe and having ever consumed herbal medicine in their previous pregnancy in the study carried out by Nyeko and colleagues in Northern, Uganda (Nyeko et al., 2016). Being student, second trimester of pregnancy, primary education and secondary education were significantly associated with herbal drug consumption in the study carried out in Ethiopia (Laelago et al., 2016). Significantly, the herbal medicines consumption was higher

amongst females who are in a household and in a union to a highly educated husbands, who were employed in a regular job in the findings of a study carried out at Mazandaran hospital, postnatal wards (Abdollahi et al., 2018). Marital status and use during previous deliveries were significantly associated with herbal drugs consumption (Dika et al., 2017). In the research carried out by Ameade and colleagues in Northern Ghana, employment status was the only factor associated with the consumption of herbal medicine when women are pregnant with unemployed mothers patronizing the herbal medicine most (Ameade et al., 2018). The utilization of herbal medicinal throughout pregnancy is associated between educational status of women, income level of households and age of women (Laelago, 2018).

In conclusion, several studies by researchers have showed the prevalence of herbal medicine consumption and the factors associated between the usage amongst women who are pregnant. This current study, however seeks to determine the prevalence of herbal medicine usage among pregnant women, type and reason of herbal medicine usage among pregnant women, adverse effects of use of herbal medicine on pregnancy outcomes and factors associated with the use of herbal medicine among pregnant women in Nkwanta North and South Districts, Ghana.

## CHAPTER THREE

### METHODS

#### **3.1 Introduction**

This chapter introduces the research methodology that was employed in determining factors associated with the consumption of herbal medication among women who are pregnant in the Nkwanta North and South Districts, Ghana. It includes, type of study, description of study site, inclusion and exclusion criteria, detailed sample calculation, study variables, sampling procedure, data analysis and ethical issues. Issues relating to data quality was also discussed.

#### **3.2 Type of study**

The research was a descriptive cross-sectional study. The study type was appropriate for this study because, it allows for the measurement of both the exposure variable, thus age, number of pregnancy and children, place of residence and socio-economic status and the outcome variable (use of herbal medicine during pregnancy) at the same time.

#### **3.3 Study site description**

This current study was conducted in two districts; Nkwanta North and Nkwanta South in the Oti Region. The Nkwanta North district with Kpassa as district capital has a total population of about 64, 553 according to the 2010 Population and Housing Census. Males constitute 50.2% of the district whilst majority of the population is rural. Nkwanta North has a total fertility rate of 4.6%. Nkwanta North District is bounded on the North by Nanumba South District in the Northern Region, East by the Republic of Togo, West by the Kpandai District in the Northern Region and South by the Nkwanta South Municipal in the Oti Region (GSS, 2010).

The Nkwanta South Municipal, according to the 2010 population and Housing Census has a total population of 117,878. This represent 5.7% of total population of the region. In the district, females form majority and 74.4% of the population is urban. The district has a Total Fertility Rate of 4 and the general fertility rate is 121.4 births per 1000 women aged 14-49 years. Nkwanta South Municipal is bounded on the North by Nkwanta North District in the Oti Region, South by the Kadjebi District in the Oti Region, East by the Republic of Togo and West by Krachi East Municipal in the Oti Region. (GSS, 2010)

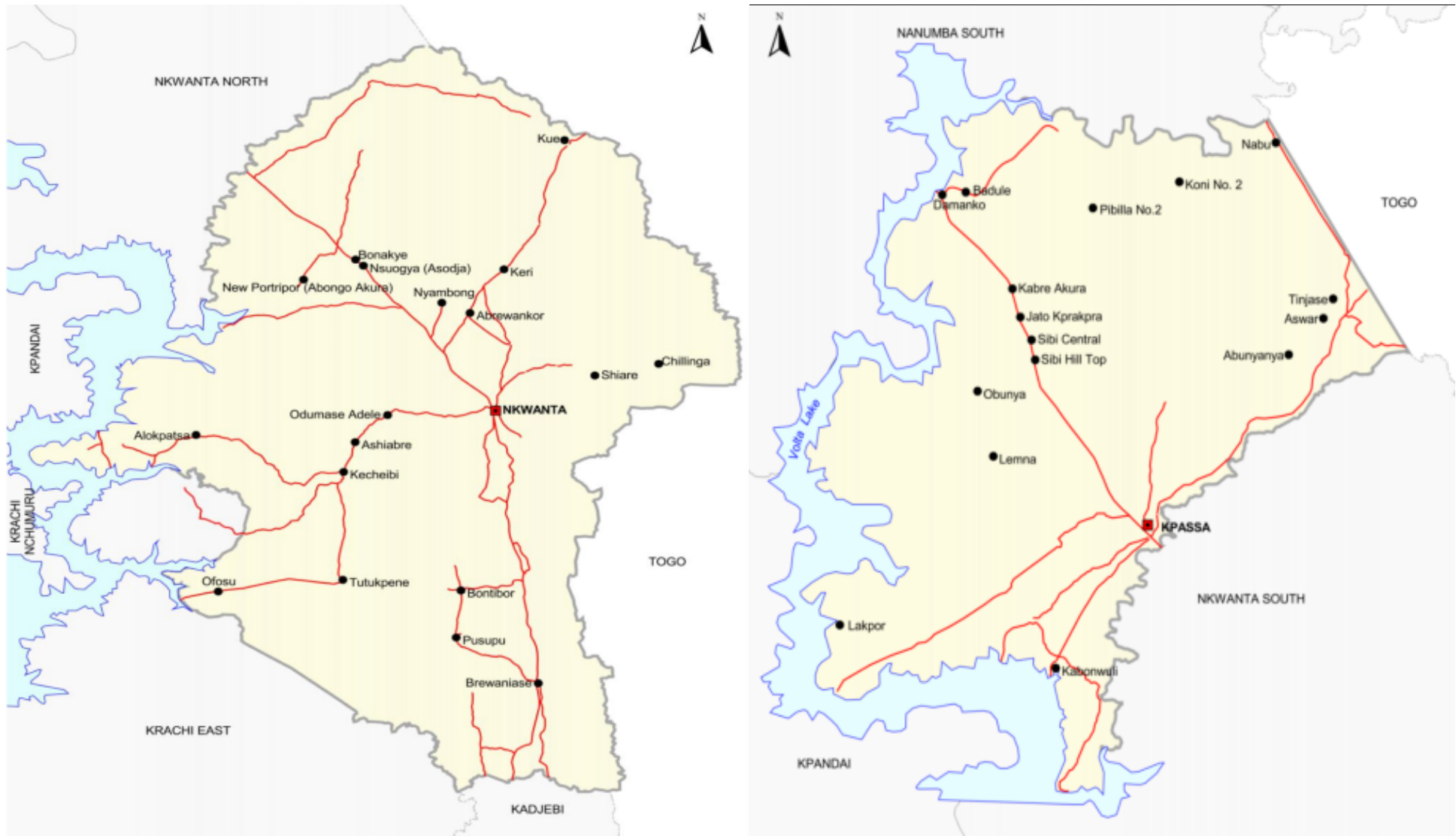


Figure 2: Study Site

### **3.4 Study population**

The target population of the study were pregnant women of all ages attending Antenatal Clinic in selected health facilities (ANC).

#### **3.4.1 Dependent variable**

Herbal medicine use and perceived side effects of herbal medicine use

#### **3.4.2 Independent variables**

Age, marital status, occupation, educational level, socio-economic status, place of residence, number of children, accessibility of Health Centre.

### **3.5 Inclusion criteria**

Pregnant women of all ages resident in the Nkwanta North and South Districts for 12 months or more were included in the study.

### **3.6 Exclusion criteria**

Women who were pregnant at the time of the data collection and resident in communities less than a year in the selected districts were excluded from the research.

### **3.7 Sample size determination**

Formula was used to determine the Sample size:

$$n = \frac{z^2 \times p(q)}{d^2} \text{ (Snedecor, George \& Cochran, 1989).}$$

Where n is the Sample size to be determined,

z is the z-score (reliability coefficient) of 1.96 at 95% confidence level (C.L),

p is prevalence of herbal medicine utilize amongst pregnant women in the Volta Region is 15% (Alor, 2015) or 0.15 as the exact prevalence in the Volta region,

d is the margin of error of 5% (0.05), and q is 1-p.

Substituting these figures into the formula above gave:

$$\begin{aligned} n &= \frac{1.96^2 \times 0.15(1-0.15)}{0.05^2} \\ &= \frac{3.8416 \times 0.15 \times 0.85}{0.0025} \\ &= \frac{0.489804}{0.0025} = 195.9216 = 196 \end{aligned}$$

For a 10% non-response rate of  $196 = 10 \div 100 \times 196 = 19.6 = 20$

The sample size was adjusted to 216. Therefore, 216 women each were recruited from both Nkwanta South and North Districts making a total of 432.

### 3.8 Sampling method

This research employed a multistage sampling technique. Firstly, eight health facilities each from the two districts were selected. In doing this, all the names of the health facilities (ANC) in one district was written on pieces of paper, wrapped and mixed in a transparent bowl. The principal investigator employed an anonymous person (nurse) who was blinded to the study objectives to pick a piece of paper from the transparent bowl without replacement. This was repeated seven times. The names of health facilities (ANC) picked were noted and were served as data collection points. The above steps was repeated for the second district. In each selected health facility (Antenatal Clinic), at each Antenatal Clinic, systematic sampling was used to select pregnant women for interview. In doing this, names of all pregnant women attending ANC and CWC were collected and used to develop a

sampling frame. Every  $k$ th unit was selected starting with a random selected number.  $K$  represent an integer that is equal to  $N/n$ . In each Antenatal Clinic (ANC) a total of 27 pregnant women were selected. Thus, one selected Antenatal Clinic with 121 pregnant women attending Antenatal Clinic and Child Welfare Clinic (CWC) for instance, out of the 121 pregnant women a systematic random sampling were used to select 27 pregnant women. The skip interval was approximated to 5 ( $121 \div 27 = 4.7$ ). Using a random number table, 3 was chosen from 1 to 5. We then started with pregnant woman 3 and picked from every 5<sup>th</sup> woman. This was repeated at the rest of the selected Antenatal Clinics.

### **3.9 Data collection tools**

Pregnant women were interviewed using a semi-structured questionnaire designed from thorough review of literature. The questionnaire was structured into three parts. First part contained asking questions relating pregnant women consumption or intake of herbal medicine. This was used to determine the prevalence of herbal medicine consumption in the selected health facilities in the Nkwanta North and South Districts of Oti Region. The second part was made up of some perceived effects of herbal medicine by pregnant women. The final part was comprised questions targeted at factors associated with the herbal medicine consumption amongst women who are pregnant in the selected ANCs in the Nkwanta North and South Districts.

### **3.10 Data collection**

Data collection was done through one and one interview using a semi-structured questionnaire on pregnant women. It was done simultaneously in selected districts during ANC visit to Child Welfare Clinic (CWCs) days (These days are determined by the districts health directorate). Sixteen data collectors (research assistants) were trained. Eight from

each district. Few weeks to data collection, the sixteen research assistants were trained on data collection process and data collection tools. For a period of two weeks research assistants were stationed at selected ANCs.

### **3.11 Data quality**

Data quality according to Abdelhok et al., (1988) is a phenomenon which represents an intended or defined by an official source, objective, and it is unbiased and comply with known standards. According to them, it entails, accuracy and validity (form original source), reliability (consistent and information acquired is understandable), complete (all relevant data are gathered), legibility (readable), accessibility and confidentiality/security (data is only available to authorized persons when there the need arise) and useful (information is pertinent and useful). In ensuring data quality in this study, the principle investigator ensured that, data was only collected or acquired from pregnant women, hence ensuring the accuracy and validity. Furthermore, research assistants were trained on data collection and data collection tools were pre-tested. Firstly, pre-testing tool was done to ensure that, research assistants familiarize themselves with data collection tools and at the same time address inconsistencies and difficulties that arise during the actual data collection process. Secondly, training research assistants on data collection process was to ensure that, the same language and understanding of questions was communicated to all pregnant women in order to ensure data consistency and understandability across board. Also, names of pregnant women were not collected. Only identity codes were used during data collection process and reporting process. Data was in the custody of the principal researcher and only accessible to him. Research assistants were urged to complete each data questionnaire. After each session of data collection, the principle investigator assessed each questionnaire for completeness before filing. Finally, in designing the questionnaire, the principle investigator reviewed relevant literature in order to ensure the right questions were being asked.

Irrelevant questions in other words, questions not relating to the study objectives were not considered.

### **3.12 Data analysis**

Data from the field was entered into SPSS version 20 and exported to STATA 15 for analysis. The data was cleaned. Descriptive statistics such as proportions, frequencies, mean and standard deviation were used in summarizing study population. Also, proportions were employed to describe the prevalence of herbal medicine consumption amongst pregnant women. In determining the association between pregnant women's herbal drug consumption and other independent variables a chi-square test was used. Logistic regressions, thus adjusted and unadjusted odds ratios which establishes the strength of associations were employed to determine the factors associated between the use of herbal medicine among women who were pregnant. A p-value  $<0.05$  was considered as statistically significant.

### **3.13 Ethical issues**

Ethical clearance and approval of this study was sought from the Ghana Health Service Ethical Review Committee, Research and Development Division. Authorization was also obtained from the District Health Directorates of selected districts to engage their facilities, staffs for the data collection as well as annual reports. Before interview, consent was obtained from pregnant woman through a documented informed consent only after explaining the benefits, risks of participation of the study. For reference sake, two written informed consent were collected, one was in the custody of the pregnant woman while another locked in a cabinet with the principal investigator. They were told that, participation in the study is purely voluntary hence one can opt out at any time. Withdraw from the study will not affect service delivery in any way. Eligible participants were provided with enough

and required information about the study, nature or type of questions that were asked, and most importantly the implications or contribution of the study to future research community. Even though there would not be direct risk involved in participating in the study, there would be some discomfort pertaining to answering some questions. The study participant had no direct benefits. However, participants were given a pencil as a token for participating in the research and appreciated for the time they have spent to participate in the research.

## CHAPTER FOUR

### RESULTS

#### 4.1 Introduction

This chapter present analysis and detailed description of results based on study objectives. This section presents the demographic characteristics of pregnant women, Use of herbal medicine, perceived benefits and adverse effects of herbal medicine and factors associated with the use of herbal medicine among pregnant women. The results are presented in tables and graphs.

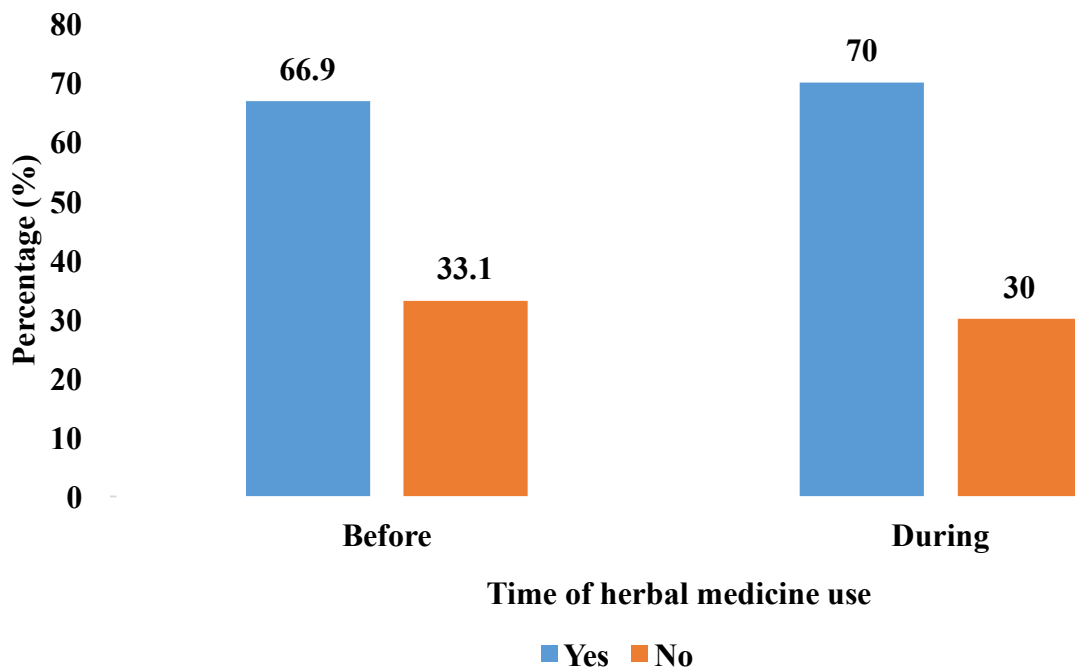
#### 4.2 Background characteristics of pregnant women

Table 4.1 presents the background characteristics of pregnant women sampled for this research in the Nkwanta North and South Districts of Oti Region, Ghana. A total number of 433 pregnant women were sampled with mean age 27.10( $\pm$ 6.58) years. Slightly more than half (51.5%) of the pregnant women were 20-29 years of aged, followed by 30-39 years (31.0%), 15-19 years (14.6%) and then 40-49 years (3.0%). Majority (88.7%) of the pregnant women were married and 9.5% were single. Most (72.8%) of the pregnant women had no formal education. Only 13.6% had primary level and 9% had JHS/middle level of education. About half (51.3%) were Christians and another third reported traditional worship (34.6%). Majority of the pregnant women were either in their second (49.2%) or third (45.7%) trimester at the time of the study. About one-fifth (20.8%) of the women had no child. One hundred and thirty women had experienced five or more deliveries and 18.5% had experienced one pregnancy.

**Table 4.1: Background characteristics of pregnant women**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age</b>		
15-19	63	14.6
20-29	223	51.5
30-39	134	31.0
40-49	13	3.0
<b>Marital status</b>		
Single	41	9.5
Married	384	88.7
Co-habiting	8	1.8
<b>Educational level</b>		
No formal education	315	72.8
Primary	59	13.6
JHS/middle	39	9.0
SHS/Technical	17	3.9
Tertiary	3	0.7
<b>Religion</b>		
No religion	36	8.3
Christian	222	51.3
Muslim	25	5.8
Traditional	150	34.6
<b>Trimester</b>		
1 <sup>st</sup> trimester	22	5.1
2 <sup>nd</sup> trimester	213	49.2
3 <sup>rd</sup> trimester	198	45.7
<b>Number of children</b>		
none	90	20.8
1	81	18.7
2	85	19.6
3	73	16.9
4	52	12.0
≥5	52	12.0
<b>Number of pregnancies</b>		
1	80	18.5
2	66	15.2
3	84	19.4
4	73	16.9
≥5	130	30.0

**Ever use of herbal medicine among pregnant women**

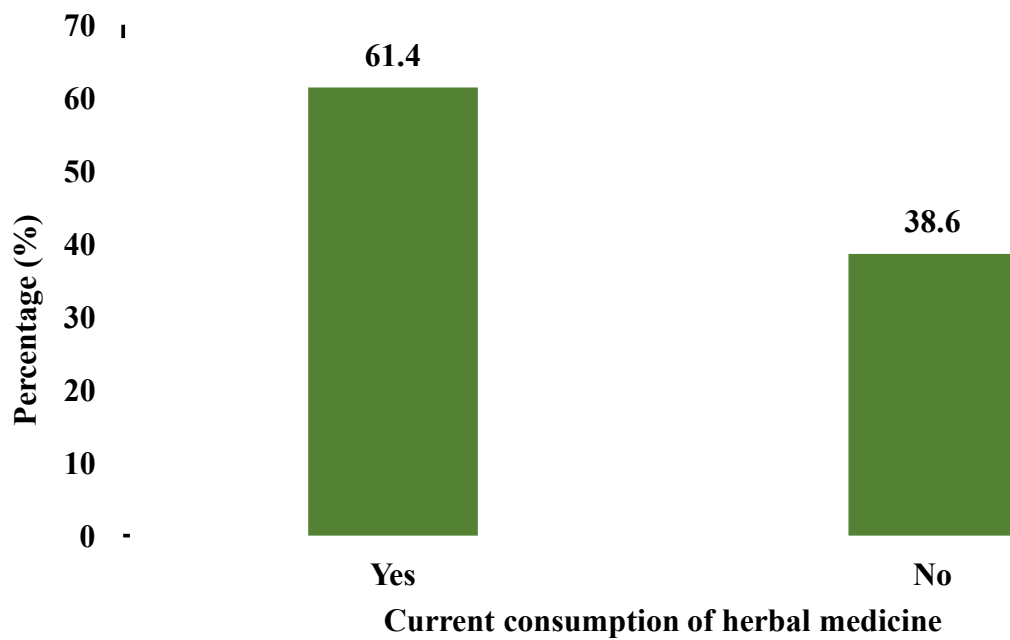


**Figure 4.1: Herbal medicine use amongst pregnant women**

Figure 4.1 shows the prevalence of pregnant females who have ever used herbal medicine. Out of the 433 pregnant women, 70.0% had ever used herbal medicine. However, prior to current pregnancy, only 66.9% of the women who were pregnant were using herbal medicine while 33.1% never uses herbal medicine.

### Current consumption of herbal medicine amongst pregnant women

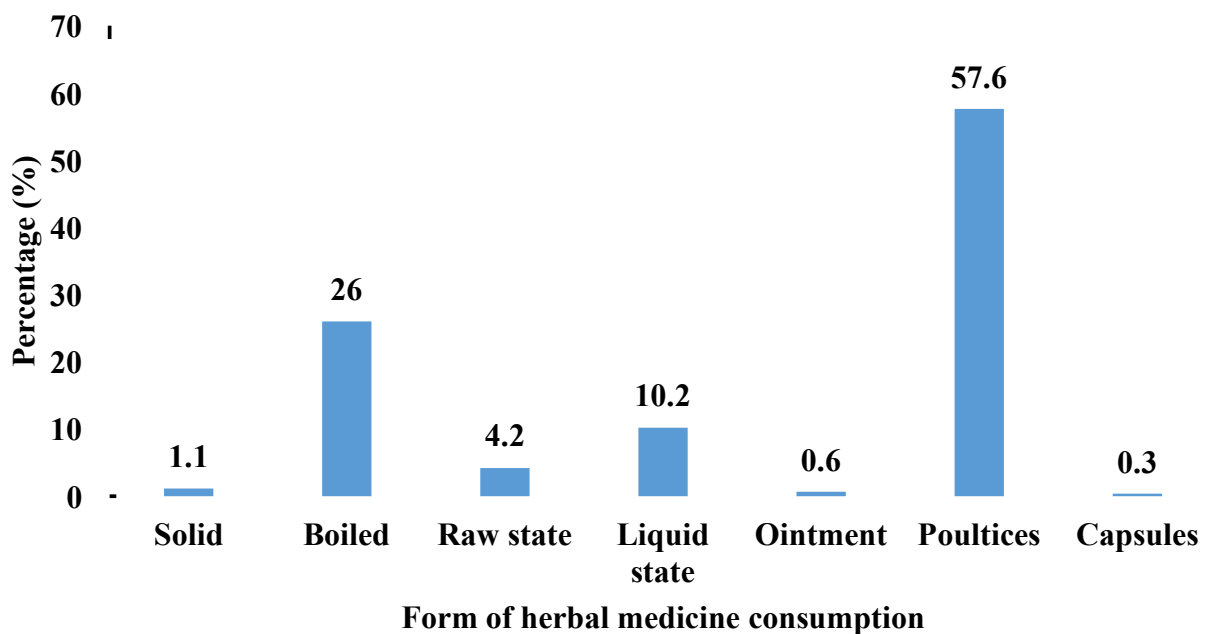
Figure 4.2 shows the prevalence of pregnant women who were currently consuming herbal medicine during the time of the research. Out of the 433 pregnant women, 61.4% were consuming herbal medicine at the time of data collection.



**Figure 4.2: Herbal medicine use amongst pregnant women**

**Forms of herbal medicine consumption among pregnant women**

Figure 4.3 presents the form of herbal drugs taken by the pregnant women. Slightly more than half were poultices, 26% were boiled, 10.2% were in liquid state and 4.2% were in raw state. Capsules herbal medicines refer to solid dosage forms containing drug and appropriate filler enclosed in gelatin container. Ointment is herbal medicine in a form of a cream. Poultices are Herbs that are crushed to form a pulpy mass and mixed with foreign substance. Raw state medicines are those consumed without any special preparation or handling while boiled state is the aqueous preparation of medicine under heat conditions and liquid state herbal medicine are those in a form of liquid.

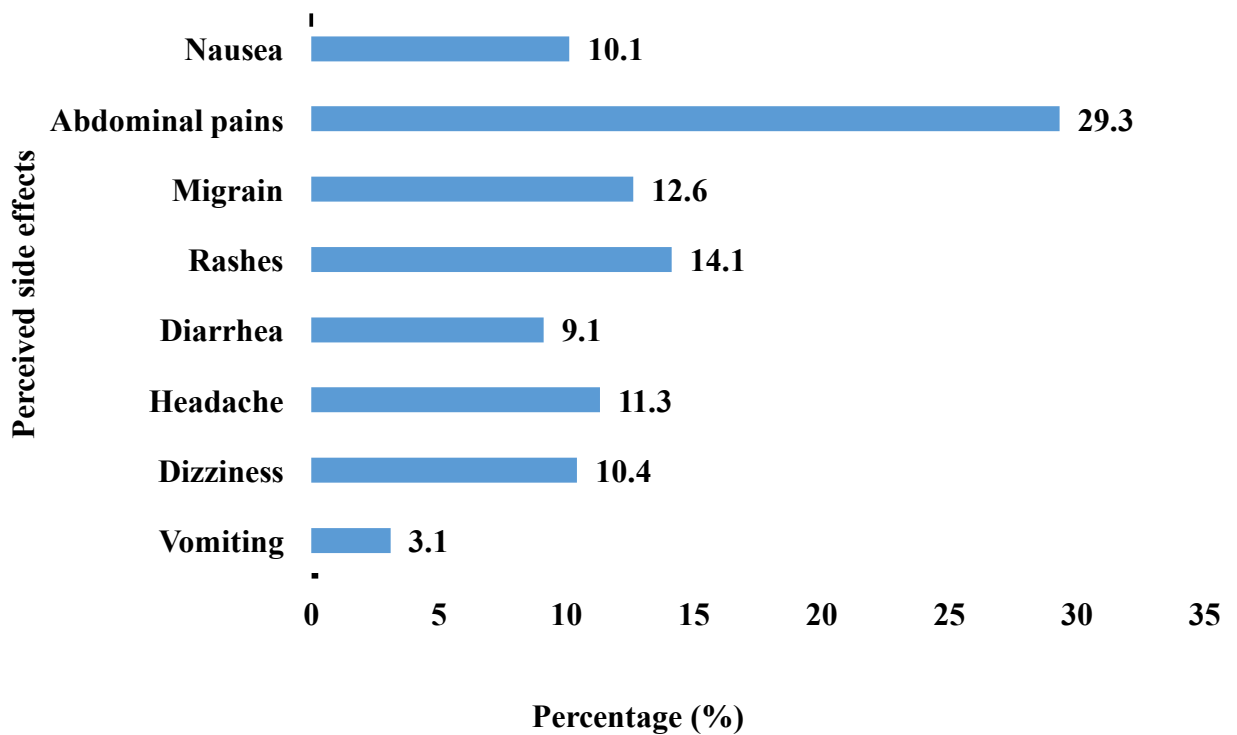


**Figure 4.3: Forms of herbal medicine consumption among pregnant women**

**Perceived side effects of herbal medicine consumption amongst pregnant women**

The pregnant women were asked their perceived side effects of the herbal drug they used.

Most of the women said they experience abdominal pains (29.3%), rashes (14.1%), migraine (12.6%), headache (11.3%), dizziness (10.4%), nausea (10.1%) and vomiting (3.1%) as shown in Table 4.4



**Figure 4.4: Perceived side effects of herbal medicine consumption amongst pregnant women**

### Perceived benefits of herbal medicine use among pregnant women

Figure 4.5 presents the perceived benefits of herbal medication consumption amongst pregnant mothers. Most of the pregnant mothers said the herbal medicine gives safe delivery (30.1%), followed by gives energy (20.1%), healthy baby (14.0%), prevent sickness (13.3%), helps give birth to many (12.2%) and makes the uterus strong (10.3%).

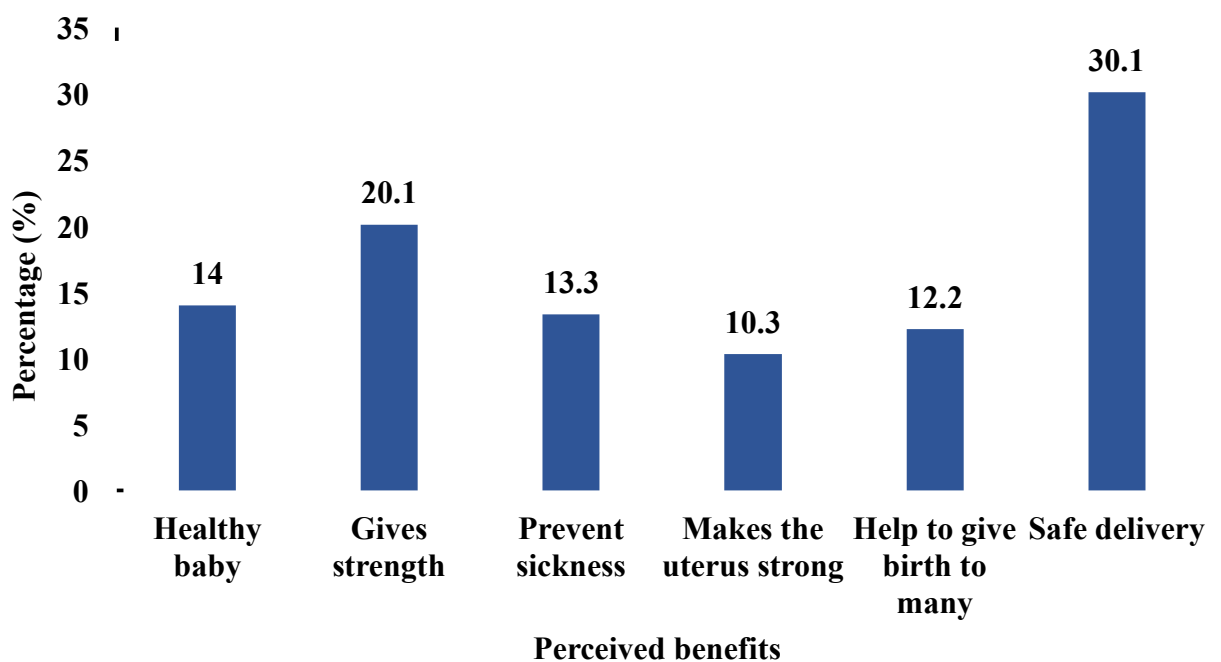


Figure 4.5: Perceived benefits of herbal medicine use among pregnant women

**Association between background characteristics and the use of herbal medicine**

Significantly, there was an association between religion and use of herbal medicine ( $\chi^2 = 24.47$ ,  $p=0.001$ ,  $\alpha=0.05$ ). There was a significant association between parity and use of herbal medicine ( $\chi^2 = 14.29$ ,  $p=0.014$ ,  $\alpha=0.05$ ). There was a significant association between gravida and use of herbal medicine ( $\chi^2 = 15.11$ ,  $p=0.004$ ,  $\alpha=0.05$ ). Significantly, there was however no association between age, marital status, educational level, trimester and consumption of herbal drug amongst pregnant women as shown in Table 4.2

**Table 4.2: Association between background characteristics and the use of herbal medicine**

Variable	No N=[167]	Yes N=[266]	Chi-square (p-value)
<b>Age</b>			
15-19	33 (19.8)	30 (11.3)	
20-29	87 (52.1)	136 (51.1)	
30-39	43 (25.8)	91 (34.2)	
40-49	4 (2.4)	9 (3.4)	7.79 (0.050)
<b>Marital status</b>			
Single	21 (12.6)	20 (7.5)	
Married	143 (85.6)	241 (90.6)	
Co-habiting	3 (1.8)	5 (1.9)	3.059 (0.217)
<b>Educational level</b>			
No formal education	109 (65.3)	206 (77.4)	
Primary	26 (15.6)	33 (12.4)	
JHS/middle	21 (12.6)	18 (6.8)	
SHS/Technical	9 (5.4)	8 (3.0)	
Tertiary	2 (1.2)	1 (0.4)	9.16 (0.057)
<b>Religion</b>			
No religion	9 (5.4)	27 (10.2)	
Christian	107 (64.1)	115 (43.2)	
Muslim	13 (7.8)	12 (4.5)	
Traditional	38 (22.7)	112 (42.1)	24.47(<0.001)
<b>Trimester</b>			
1 <sup>st</sup> trimester	11 (6.6)	11 (4.1)	
2 <sup>nd</sup> trimester	82 (49.1)	131 (49.3)	
3 <sup>rd</sup> trimester	74 (44.3)	124 (46.6)	1.33 (0.513)
<b>Number of children</b>			
None	49 (29.3)	41 (15.4)	
1	32 (19.2)	49 (18.4)	
2	30 (18.0)	55 (20.7)	
3	25 (15.0)	48 (18.1)	
4	17 (10.2)	35 (13.2)	
≥5	14 (8.4)	38 (14.3)	14.29 (0.014)
<b>Number of pregnancies</b>			
1	44 (26.4)	36 (13.5)	
2	30 (18.0)	36 (13.5)	
3	28 (16.8)	56 (21.1)	
4	24 (14.4)	49 (18.4)	
≥5	41 (24.6)	89 (33.5)	15.11 (0.004)

### **Factors influencing the uptake of herbal medicine among pregnant women**

#### **(Unadjusted logistic regression analysis)**

Pregnant women aged 30-39 years were 2.32 times more likely to consume herbal medicine as compared to those aged 15-19 years and was statistically significant [COR=2.32 (95% CI: 1.26-4.29); p=0.007]. Those aged 40-49 years and 20-29 years were also 2.47 and 1.72 times more likely to consume herbal medicine as compared to those aged 15-19 years but was not statistically significant. Pregnant females who were married and co-habiting were 1.76 and 1.75 times more likely to consume herbal medicine as compared to those who were single years but was not statistically significant. Those who had attained JHS/middle education were 55% less likely to consume herbal medicine as compared to those with no formal education and was statistically, significant [COR=0.45 (95% CI: 0.23-0.87); p=0.021]. Pregnant women who were Christians were 65% less likely to consume herbal medicine as compared to those who belong to no religion and the difference was statistically significant [COR=0.35 (95% CI: 0.16-0.79); ]. However, those who were Muslims were 1.31 times more likely to consume herbal medicine as compared to those who belong to no religion and the difference was not statistically significant. Pregnant women with two, three, four, five and more children were 2.19, 2.29, 2.46 and 3.24 times more likely to use herbal medicine as compared to those without any child and these were significantly associated. Although not significant, those who have experienced three, four and five and more pregnancies were 2.44, 2.49 and 2.65 times more likely to consume herbal medicine as compared to those who have experienced pregnancy only once as shown in Table 4.3

### **Factors influencing the uptake of herbal medicine among pregnant women**

#### **(Unadjusted logistic regression analysis)**

Pregnant women aged 30-39 years were 1.01 times more likely to consume herbal medicine as compared to those aged 15-19 years and was not statistically significant after adjusting [AOR=1.01 (95% CI: 0.37-2.73); p=0.975]. Those aged 40-49 years were 1.13 times more

likely to consume herbal medicine as compared to those aged 15-19 years but was not statistically significant. Pregnant women who were Christians were 0.35 less likely to consume herbal medicine as compared to those who belong to no religion and the difference was statistically significant [AOR=0.35 (95% CI: 0.15-0.81); p=0.014]. However, those who were Muslims were 1.23 times more likely to utilize herbal medicine as compared to those who belong to no religion and the difference was statistically significant [AOR=1.23 (95% CI: 0.09-3.33); p=0.033] as shown in Table 4.3

**Table 4.3: Factors influencing the uptake of herbal medicine among pregnant women**

Variable	COR (95% CI)p-Value	AOR (95% CI) p-Value
<b>Age</b>		
15-19		
20-29	1.72 (0.97-3.01) 0.059	0.85 (0.38-1.85) 0.685
30-39	2.32 (1.26-4.29) 0.007	1.01 (0.37-2.73) 0.975
40-49	2.47 (0.68-8.87) 0.164	1.13 (0.22-5.62) 0.880
<b>Marital status</b>		
Single		
Married	1.76 (0.93-3.37) 0.084	
Co-habiting	1.75 (0.36-8.30) 0.481	
<b>Educational level</b>		
No formal education		
Primary	0.67 (0.38-1.18) 0.166	0.95 (0.53-1.78) 0.878
JHS/middle	0.45 (0.23-0.87) 0.021	0.70 (0.50-1.79) 0.337
SHS/Technical	0.47 (0.17-1.25) 0.132	0.84 (0.28-2.47) 0.755
Tertiary	0.26 (0.02-2.95) 0.280	0.48 (0.04-5.65) 0.561
<b>Religion</b>		
No religion		
Christian	0.35 (0.16-0.79) 0.012	0.35 (0.15-0.81) 0.014
Muslim	1.31 (0.10-0.91) 0.034	1.23 (0.09-3.33) 0.033
Traditional	0.98 (0.42-2.27) 0.967	0.85 (0.36-2.09) 0.726
<b>Trimester</b>		
1 <sup>st</sup> trimester		
2 <sup>nd</sup> trimester	1.59 (0.66-3.85) 0.297	
3 <sup>rd</sup> trimester	1.67 (0.69-4.05) 0.252	
<b>Number of children</b>		
None		
1	1.83 (0.99-3.37) 0.052	0.93 (0.28-3.01) 0.917
2	2.19 (1.19-4.02) 0.011	0.59 (0.13-2.55) 0.479
3	2.29 (1.21-4.33) 0.011	0.75 (0.14-3.91) 0.734
4	2.46 (1.21-5.10) 0.013	0.99 (0.16-6.08) 0.996
≥5	3.24 (1.54-6.79) 0.002	1.02 (0.16-6.46) 0.982
<b>Number of pregnancies</b>		
1		
2	1.47 (0.76-2.82) 0.252	1.67 (0.51-5.49) 0.401
3	2.44 (1.29-4.60) 0.006	3.65 (0.83-16.70) 0.086
4	2.49 (1.29-4.81) 0.006	2.90 (0.55-15.14) 0.206
≥5	2.65 (1.49-4.71) 0.001	2.25 (0.38-13.23) 0.368

## CHAPTER FIVE

### DISCUSSION

The world has long been notified of the risks associated with herbal medicines but they continue to play an important roles in the management of minor and major ailments in developed and developing countries where their consumption is reported to be on the increase (Tamuno, Omole-Ohonsi, Fadare, 2010). Majority of the traditional herbal medicines utilized in Africa are provided by practitioners who live within the catchment areas (communities), have been trusted over time and are often available to help the patients with their knowledge and skills sometimes at minimal costs to the patients (Tamuno et al., 2010). Herbal medicine use amongst women who are pregnant raises particular concerns of safety. These safety concerns have been attributed to the herbal substances and itself interactions with herbal product and other pharmaceuticals (example, ginseng and insulin) and pollution of products by unlabeled toxins (example, lead and mercury) (Dugoua, Mills, Perri, & Koren, 2006). This research aimed to determine the prevalence of herbal medicine use and factors associated with usage among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana. The findings of this present research discovered that the prevalence of consumption of herbal medicine is 61.4%. The consumption of herbal drug among women who were pregnant in this research was higher as compared to the results obtained by Tamuno and colleagues in Northern Nigeria who found that consumption of herbal medicine amongst pregnant women was 31.4% which is lower compared to the finding of this study (Tamuno, Omole-Ohonsi, & Fadare, 2010). The results of this research is higher as compared to the findings obtained in the research conducted by Mekuria and colleagues. They used an institutional-based cross-sectional study to assess herbal medicine utilization amongst women who were pregnant visiting antenatal clinics (ANC) in the

University of Gondar referral and teaching hospital, Northwest Ethiopia. Their outcomes revealed that 48.6% of the women who were pregnant were currently using herbal medicine (Mekuria et al., 2017). A descriptive cross-sectional research carried out among mothers visiting postnatal care services in four sites in Gulu district discovered that, the prevalence of utilization of herbal medicines throughout the current pregnancy was 20% (Nyeko, Tumwesigye, & Halage, 2016). Another facility based cross sectional research carried out amongst pregnant women attending ANC showed that, 73.1% of pregnant females consumed herbal drug during pregnancy (Laelago, Yohannes, & Lemango, 2016). A cross sectional study conducted to ascertain the prevalence of consumption of herbal amongst pregnant females discovered that, the consumption of herbal medicine increased from 22.7% before pregnancy to 48.4% when they were pregnant (Abdollahi, Khani, & Charati, 2018). A research designed to determine the prevalence of herbal drug consumption in Tanzania showed that, only 23.0% used herbal medicine (Dika, Dismas, Iddi, & Rumanyika, 2017). A study carried out, to evaluate the consumption of herbal medicine amongst females who are pregnant in Tamale, Northern Ghana discovered that, 52.7% women consumed herbal medicine during pregnancy (Ameade, Zakaria, Abubakar, & Sandow. 2018). The study carried out by Ameade and colleagues was done in Ghana likewise this current study. The high utilization of herbal medicine amongst women who were pregnant as found in this current research could be due to differences in geographical locations as well as cultural beliefs and systems in which these studies were conducted.

The results again indicate that the herbal medications were in the form of poultices, of which some were boiled, 10.2% were in liquid state and 4.2% were in raw state. The ingredients used for the preparation of the herbal medicine in this study is different from the results obtained by Ahmed and colleagues. The findings from their study revealed that the common forms of the herbal medication used by the pregnant women were ginger, black seed, lemon

tea, prune, and mustard oil (Ahmed, Hwang, Hasan, & Han, 2018). However, findings from the study carried out by Mekuria and colleagues indicated the use of only garlic and ginger in the preparation of the herbal medicine (Mekuria et al., 2017). A research carried out by Laelago and colleagues in Ethiopia showed that, the herbal medicine commonly taken during the recent pregnancy were garlic, ginger, tenaadam, damakasse and eucalyptus (Laelago et al., 2016). A research conducted in Northern Ghana revealed that the leaves of the raw plant were the most used parts for the herbal medicine (Ameade et al., 2018). The ingredients used for herbal preparations differs from one geographical location to the other and this could be influenced by the type of ingredients available, cultural beliefs and taboos as well as individual preferences influencing the type of ingredients used in herbal preparations consumed.

In this study, the pregnant women were asked their perceived side effects of their use of herbal medicine. Most of the women said they experience abdominal pains, rashes, migraine, headache, dizziness, nausea and vomiting. The results in the study carried out by Laelago (2018) showed that heartburn, preterm labour, miscarriage, increase in blood flow, abortion and allergic reactions were the common troubles of herbal medicine use during pregnancy. Also, findings from an unmatched case control study conducted to assess the impact of utilization of herbal medicine on birth outcomes showed that, precipitated labour was significantly associated with the utilization of traditional medicine (Tinashe, Miriam, & Auxillia, 2016). A cross sectional analysis of secondary data household in rural Malawi revealed that, those who use herbal medicine had an increased reported occurrences of maternal morbidity and neonatal mortality or morbidity (Zamewe, King, Jennings, & Fottrell, 2018). The consumption of herbal medicine can affect the pregnant mother and unborn child due to unsafe herbal ingredients and pollution of products by unlabeled toxins (example, lead and mercury) (Dugoua, Mills, Perri, & Koren, 2006).

The findings of this study revealed that most of the pregnant mothers said the herbal medicine gives safe delivery, gives energy, healthy baby, prevent sickness, helps to give birth to many and makes the uterus strong. The results of this research carried out revealed that herbal medicine was utilized for several factors which includes relieving of symptoms for instance fever, abdominal and waist pains as well as nausea and vomiting (Nyeko et al., 2016). The results of another study also indicated that herbal medicine was to promote fetal health and intelligence (Abdollahi et al., 2018). The consumption of the herbal medicines may be influenced by individual preferences and other factors.

The present study found that pregnant women aged 30-39 and 40-49 years were having high chance of consuming herbal medicine as compared to those aged 15-19 years and was not statistically significant. The findings of this study is similar to the result obtained by Laelago (2018) where the mothers in the older aged group were more likely to use herbal medicine as compared to those in the younger age group but was statistically significant. Mothers in the older age group that tend to use herbal medication as found in this study could be attributed to the fact that the mothers have more knowledge and experience with child birth and exposed to more culture and traditions as compared to the teenage mothers. This study found that pregnant women attained primary, JHS/middle, SHS/technical and tertiary education were less likely to use herbal medicine as compared to those with no formal education and the difference was not statistically significant. The results of this study is similar to the results obtained in the study where pregnant women with no formal education tend to consume herbal medication as compared to those who have attained some level of education in the study carried out by Tamuno et al. (2010). Another study by Mekuria and colleagues is congruent to the results of this research where they found that women who were pregnant in Ethiopia with no formal education were having high chance of consuming herbal medicinal as compared to those who are educated. The findings in this study could

possibly be due to the fact that mother who are educated have knowledge on the harmful nature of the herbal medicine and can also afford and access well-structured healthcare services because they might be working and earning some income. The study again identified that pregnant women who were Christians at the time of the study were less likely to consume herbal drug as compared to those who belong to no religion and those who were Muslims were rather having higher chances of utilizing herbal medicine as compared to those who belong to no religion.

The study anticipated association between the use of herbal medicine and mass media campaign. However, there was no association between the herbal medicine use and mass media campaign. Thus, focus should not be emphasis on mass media when future research is been carried out in the study area regarding herbal medicine usage.

### **Study Limitation**

This study was cross-sectional design which precludes the determination of a temporal relationship. In every research there are bound to be limitations since the research cannot include the entire population under study which is a first-hand limitation. Nevertheless, this study present the first empirical evidence of herbal medicine use among pregnant women in the Nkwanta North and South of Oti Region, Ghana and will help influence policy decision and mode of practice regarding herbal medicine use in the region.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATION

The herbal medicine consumption amongst pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana was high (61.4%), Six out of every ten (10) pregnant women used herbal medicine when pregnant. The unknown safe state of the herbal medicine makes its use life threatening to the pregnant women and the unborn baby. The herbal medications were in the form of poultices, of which some were boiled, in the liquid state and in their raw state. Most of the pregnant women reported that they experience abdominal pains, rashes, migraine, headache, dizziness, nausea and vomiting. Their perceived benefit on the consumption of the herbal medicine was that it gives safe delivery, gives energy, healthy baby, prevent sickness, helps to give birth to many and the makes the uterus strong. The factors associated with the consumption of herbal drug was educational level, religion and age. Pregnant women in the older age group were having high chance of using herbal medicine compared to those in the younger age group. Also, those with some form of education were having lower chances of using herbal medicine as compared to those with no formal education. Those who were Muslim's were having higher chances of using herbal medicine as compared to those with no religion.

#### **6.1 Recommendations**

The District Health Management Team in the District Health Directorate together with the health staff especially midwives and nurses should intensify education on effects of herbal medicine consumption during pregnancy.

Pharmacological study focusing on local commonly used herbal medicines should be done. This should be carried out to identify the exact active compounds of the herbs and to evaluate the effects of these compounds to the pregnant woman.

Studies into the types of plants and the parts of plants used for medicine should be investigated in the future. The documentation of plants and their therapeutic properties is an area that must be of interest to future researchers

The religious leaders especially the Muslim community should use their forms of gatherings and meetings to help educate on the utilization of herbal medication during pregnancy

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**APPENDICES**

**Appendix I: Questionnaire**

I am a student of the School of Public Health, University of Ghana carrying out a research on *“Factors associated with the use of herbal medicine among pregnant women in the Nkwanta North and South Districts, Ghana.*

<b>Questionnaire Code: .....</b>		
<b>Date of interview .....</b>		
<b>SESSION 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS</b>		
1. How old were you at your last birthday? (In completed years)		
2. What is your marital status?	<ul style="list-style-type: none"> <li>1. Married</li> <li>2. Co-habiting</li> <li>3. Single</li> <li>4. Divorced</li> </ul>	
3. What is the highest level of education you have completed?	<ul style="list-style-type: none"> <li>1. No formal education</li> <li>2. Primary</li> <li>3. JHS/Middle school</li> <li>4. SHS/Technical</li> <li>5. Tertiary</li> </ul>	
4. What religion do you currently practice?	<ul style="list-style-type: none"> <li>1. Christian</li> <li>2. Muslim</li> <li>3. Traditional</li> <li>4. Other, Specify.....</li> </ul>	
5. What is your current primary occupation?	<ul style="list-style-type: none"> <li>1. Student</li> <li>2. Apprentice</li> <li>3. Trading</li> <li>4. Not working</li> <li>5. Other, (specify).....</li> </ul>	<b>If 2, 3,4,5 skip to 7</b>

<p>6. If answer is 1 to Q5, what is your main source of your income?</p> <p><i>(Ask this question in case participant indicated student or not working in Q5 above)</i></p>	<p>1. Parents 2. Spouse 3. Self 4. Friends 5. Other (specify) .....</p>	
<p>7. How old is your current pregnancy (gestational age) <i>Provide answer in space to your right</i></p>	<p>..... .....</p>	
<p>8. How many times have you been pregnant in your lifetime? <i>Specify number</i></p>	<p>..... .....</p>	
<p>9. How many were born alive?</p>	<p>..... .....</p>	
<p><b>SESSION 2: PREVALENCE OF HERBAL MEDICINE USE AMONG PREGNANT WOMEN</b></p> <p><i>Herbal medicine in this study is defined as the use of plant products, either in their raw or processed state for health purpose. These products are sometimes referred to as “Doyogbe” in the communities.</i></p>		
<p>10. Have you ever used herbal medicine prior to your current pregnancy or any of your pregnancies? <i>(use definition above)</i></p>	<p>1. Yes 2. No</p>	
<p>11. Are you currently using any herbal medicine? <i>(use definition above)</i></p>	<p>1. Yes 2. No</p>	<p><i>If No, skip to QN 14</i></p>
<p>12. If yes, specify the number of the different types of herbal medicine used. <i>Specify in number</i></p>	<p>[                    ]</p>	

<i>Form of herbal medicine</i>	<i>Specify by ticking</i>	<i>Frequency (per week)</i>	<i>Source of herbal medicine</i>
Solid			
Decoction ( <i>boiling</i> )			
Raw state			
Liquid state			
Ointment			
Poultices ( <i>Herbs are crushed to form a pulpy mass and mixed with foreign substance such as alcohol</i> )			
Capsules or Tablets			
Tinctures ( <i>Soaking plants in alcohol</i> )			
13. At what month in this pregnancy did you start using any type of herbal medicine?	..... ..... .....		
<b>SECTION 3: PERCEIVED ADVERSE EFFECT OF HERBAL MEDICINE USE ON PREGNANT WOMEN</b>			
14. What adverse experiences did you experience?	1. Vomiting 2. Dizziness 3. Headache 4. Diarrhea 5. Rashes 6. Other (specify).....		
15. How often did you experience this adverse effect?	1. Once 2. Twice 3. Thrice 4. Four and above		
16. Do you still take the herbal medicine even though you experience these side effects indicated?	1. Yes 2. No		
17. If yes, what is the reason?	..... ..... ..... .....		

<b>SECTION 4: FACTORS INFLUENCING USE OF HERBAL MEDICINE AMONG PREGNANT WOMEN</b>		
18. What influenced your decision to use herbal medicine?	1. Recommendation from my friend/family to use it 2. Cheap to buy 3. Easily available 4. Advertisement on Radio/TV 5. Other (specify)	
19. What do you think about herbal medicines in relation to managing pregnancy related issues?	..... ..... ..... .....	
20. What do you think about orthodox medicines in relation to managing pregnancy related issues?	..... ..... .....	
21. Have you discussed with your health worker about herbal medicine you are using?	1. Yes 2. No	
22. Did he/she encourage you to use it?	1. Yes 2. No	
23. Do you have an active National Health Insurance Card in your possession?	1. Yes 2. No	
24. If No, what is the reason?	1. No money to register 2. Don't usually visit the hospital 3. Don't see its use 4. Other	
25. Which is more expensive to access during pregnancy?	1. Herbal medicine 2. Orthodox medicine	
26. Why the choice above?	..... .....	
Any question or clarification? ..... .....		
<b>THANK YOU FOR YOUR CO-OPERATION AND TIME</b>		

## **Appendix II: Participant Information Sheet**

### **PARTICIPANT INFORMATION SHEET FOR PREGNANT WOMEN IN THE NKWANTA NORTH AND SOUTH DISTRICTS OF OTI REGION.**

This information sheet provides information about the research for pregnant women at Nkwanta South Municipal and Nkwanta North District to make an informed decision of whether to participate in the study or not. It outlines the nature of the research, what the research involves, risks, benefits and compensation.

**Title of Study:** Factors associated with the use of herbal medicine among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana

I am Acquah Mark, a student at the University of Ghana, School of Public Health, as part of the requirement in pursuing an MPH programme.

You may contact me concerning this research study on 0245125353,

Email; [marcusbvm82@gmail.com](mailto:marcusbvm82@gmail.com) / [macquah008@st.ug.edu.gh](mailto:macquah008@st.ug.edu.gh)

#### **Background and Purpose of research**

Herbs have been used as an alternate form of treatment amidst the advent of orthodox therapies for health care. Herbs have been used as sources of potent remedies and have become an intrinsic part of various indigenous cultures around the world (Olowokere & Olajide, 2013).

The World Health Organization estimates that about 80% of rural populations residing in developing countries rely on herbal medicines for their health needs including its use during pregnancy (World Health Organization, 2018b). Studies conducted on the use of herbal medicine during pregnancy from different parts of the world show varying

prevalence in the use of herbal medicine during pregnancy (Ahmed, Hwang, Hasan, & Han, 2018; Hwang et al., 2016; Nyeko et al., 2016).

This study seek to determine prevalence of herbal medicine use and the factors associated with usage among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana. This study will presents the opportunity to provide accurate and up-to-date information on the use of herbal medicine among pregnant women in the Nkwanta North and South Districts

### **Nature of research**

This study is seeking to determine the prevalence of herbal medicine use and the factors associated with usage among pregnant women in the Nkwanta North and South Districts. The study will involve pregnant women accessing the ANC services at various health facility in the districts.

This study will employed a descriptive cross-sectional study. Data collection will be done through face-to-face interview using a semi-structured questionnaire on pregnant women and postpartum mothers. Data will be measured and computed for all the pregnant women who will be sampled to take part in answering the questionnaires.

### **Participants involved in the study**

432 pregnant women will be sampled to participate in this study and it can take a maximum of 20 minutes to answer the questionnaires, this can take a little of your time.

Respondent would gain the opportunity to express their views on herbal medicine use during pregnancy. The prevalence of herbal medicine use among pregnant women, perceived benefits and adverse effects of the herbal medicine on pregnancy outcome and factors associated with the use of herbal medicine among pregnant women. This will

inform District Health Management Team about the intervention to put in place to regulate herbal medicine use in the district.

### **Risks and Benefits**

By participating in this research, any possible risk that may occur in the form of any distress will lead to the respondent's participation in the study being ended. Respondents will be given free psychosocial support where the researcher will bear the cost if the need arises.

Results from this study will help develop interventions targeted at addressing pregnancy conditions that can be solved with scientifically proven and medically approved means rather than unregulated use of herbal medicines in the district involved.

### **Freedom to participate/ voluntary withdrawal.**

Your participation in this study is absolutely voluntary. If at any point in time, you do not wish to answer a question or feel like discontinuing answering the questions, you are free to do so. Your decision will not result in any penalty. Also, refusing to participate would not affect you. Participant opinions and experiences are important to us, so we want you to be honest and truthful in answering our questions.

### **Ethical Clearance**

Ethical Clearance has been sought from Ghana Health Service Ethical Review Committee before conducting this study and so this District Health Management Team from Health Directorate has granted us the permission to conduct the study.

### **Privacy and Confidentiality**

Kindly note that all your responses will be anonymous and will be treated confidentially. Only the researcher (PI) involved in the study and his supervisor will have access to the information you provide. Your responses will be numbered and the code used to ensure confidentiality and privacy, we will not mark any of the questionnaires of the study with participant's names.

### **Dissemination of Results**

The study results after analysis has been done will be communicated to the study to the Districts Health Directorates for decision as well as participants.

### **Sharing of participants information/Data**

Information or data that will be collected will be used solely for this study and will not be shared with other organizations or individuals.

### **Data Storage and usage**

Data collected will be used for research purposes only. Data will be stored in password-protected folders on a microcomputer. Any hard copies of the data will be kept under lock and key. Only the researcher and supervisor will have access to all forms of data collected. Questionnaires will be kept for a period of 12 months, by which time all processes relating to this study would have been completed and will be destroyed by burning them thereafter.

### **Provision of information and consent for participants**

Patients who will take part in the study will be given copies of the information sheet and the consent forms after it has been signed or thumb printed.

**Appendix III: Consent Form**

**CONSENT FORM FOR PREGNANT WOMEN IN THE NKWANTA NORTH AND SOUTH DISTRICTS OF OTI REGION.**

**Study title:** Factors associated with the use of herbal medicine among pregnant women in the Nkwanta North and South Districts of Oti Region, Ghana

**PARTICIPANTS' STATEMENT**

I acknowledge I have read or have had the purpose and the content of the Participants' Information Sheet read and all questions have been satisfactory explained to me in the language I understand ( English [ ] Twi [ ] Ewe [ ] Konkomba [ ] ). I fully understand the content and any potential implications as well as my right to change my mind. (ie withdraw from the research) even after I have signed this form. I voluntary agree to be part of this research.

Name or Initial of Participant.....ID Code.....

Participants' signature.....OR Thumb Print.....

**INTERPRETERS' STATEMENT**

I interpreted the purpose and content of the Participants' Information sheet to the afore mentioned participant to the best of my ability in the (Twi [ ] Ewe [ ] Konkomba [ ]) language to her proper understanding. All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to her satisfaction.

Name of Interpreter.....signature of interpreter.....

Date ..... Contact Details.....

**STATEMENT OF WITNESS**

I was present when purpose and content of the Participants' Information sheet was read and explained satisfactorily to the participant in the language she understood (English [ ] Twi [ ] Ewe [ ] Konkomba [ ] ). I confirm that she was given the opportunity to ask questions/ seek clarifications and same were duly answered to her satisfaction before voluntarily agreeing to be part of the research.

Name .....Signature.....OR Thumb Print.....

Date.....

**INVESTIGATOR STATEMENT AND SIGNATURE**

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant has been addressed.

Researcher's name..... Signature.....

Date .....

**Appendix IV: Ethical Clearance**

**GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE**

*In case of reply the number and date of this Letter should be quoted*



Research & Development Division  
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13<sup>th</sup> June, 2019

MyRef: GHS/RDD/ERC/Admin/App/15/106  
Your Ref. No.

Aquah Mark  
University of Ghana  
School of Public Health  
Legon

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	<b>GHS-ERC 059/04/19</b>
Project Title	<b>Factors Associated with the Use of Herbal Medicine among Pregnant Women in the Nkwanta North and South District of Oti Region, Ghana.</b>
Approval Date	13 <sup>th</sup> June, 2019
Expiry Date	12 <sup>th</sup> June, 2020
GHS-ERC Decision	<b>Approved</b>

**This approval requires the following from the Principal Investigator**

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....  
DR. CYNTHIA BANNERMAN  
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra