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DEPARTMENT OF HEALTH POLICY, MANAGEMENT AND ECONOMICS



**THE USE OF HERBAL MEDICINES BY PREGNANT WOMEN IN THE OBUASI
MUNICIPALITY**

BY

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NOVEMBER, 2019

DECLARATION

I hereby declare that this project is my own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree at Kwame Nkrumah of University of Science and Technology, Kumasi or any other Educational Institution, except where due acknowledgment is made in the thesis.

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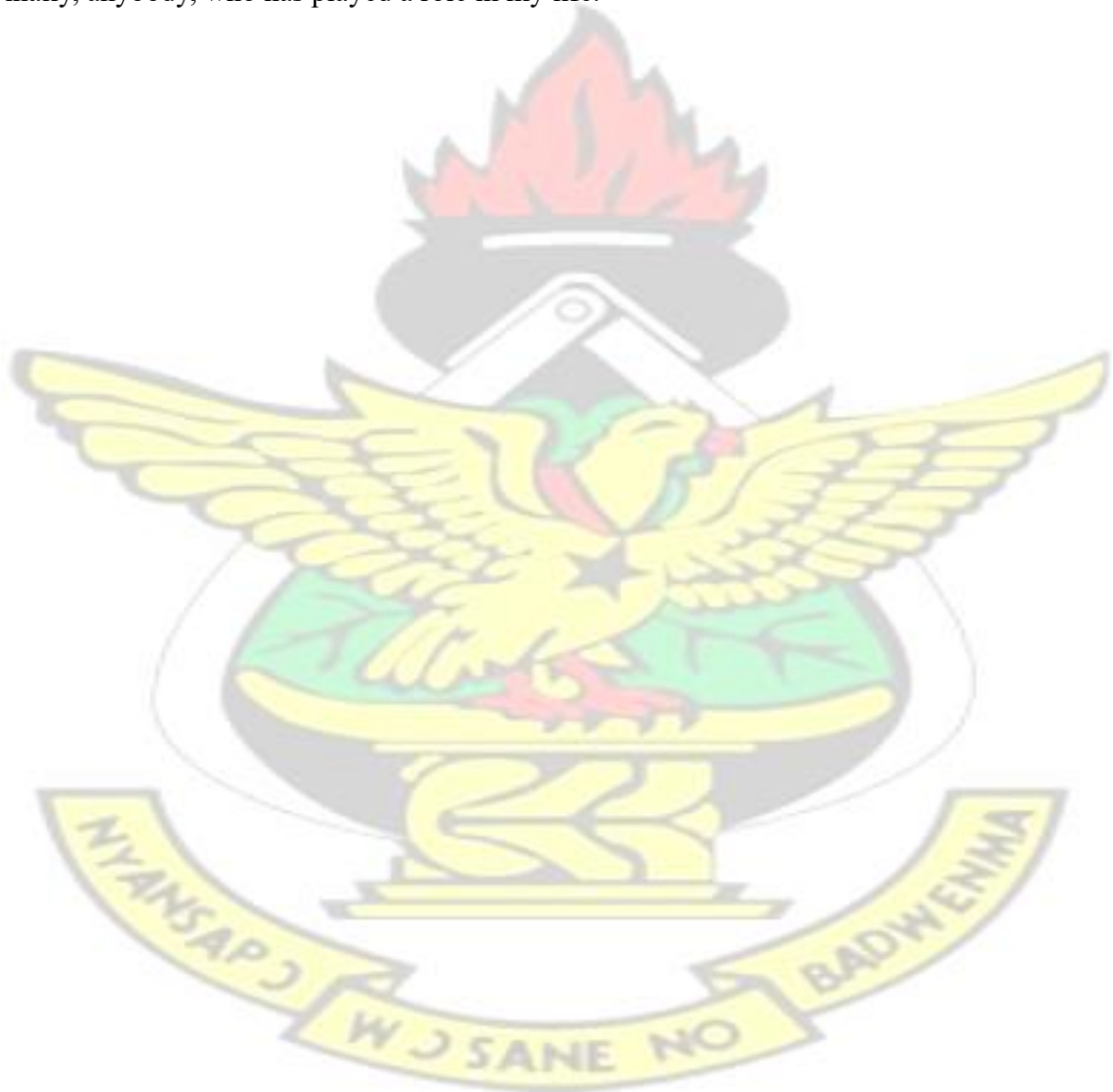
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DEDICATION

This Project Work is dedicated to GOD ALMIGHTY for HIS GRACE, FAVOUR, and LOVE showed me.

Also to my family for the overwhelming love, care, and support for making something valuable out of me.

Finally, anybody, who has played a role in my life.



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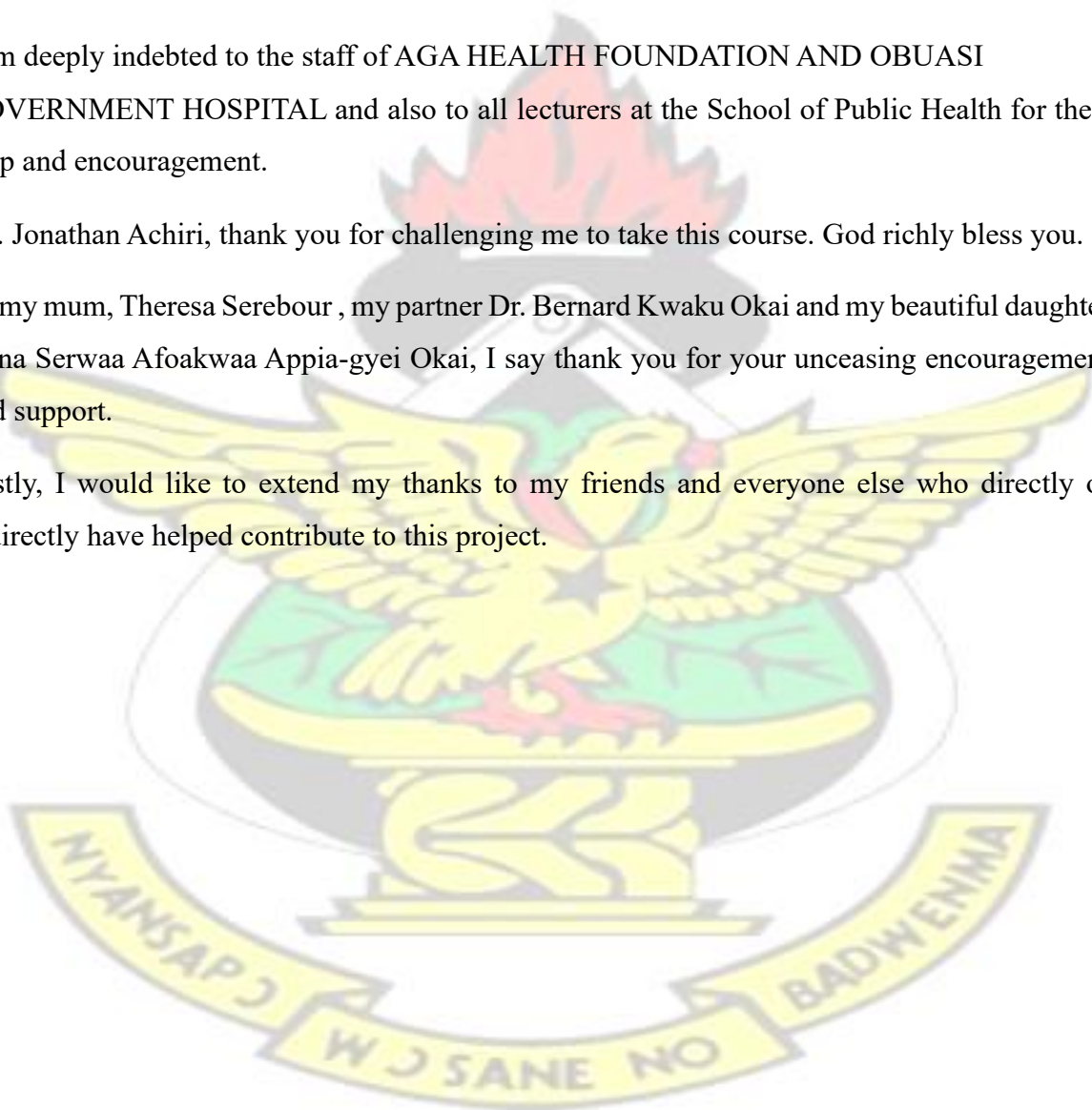


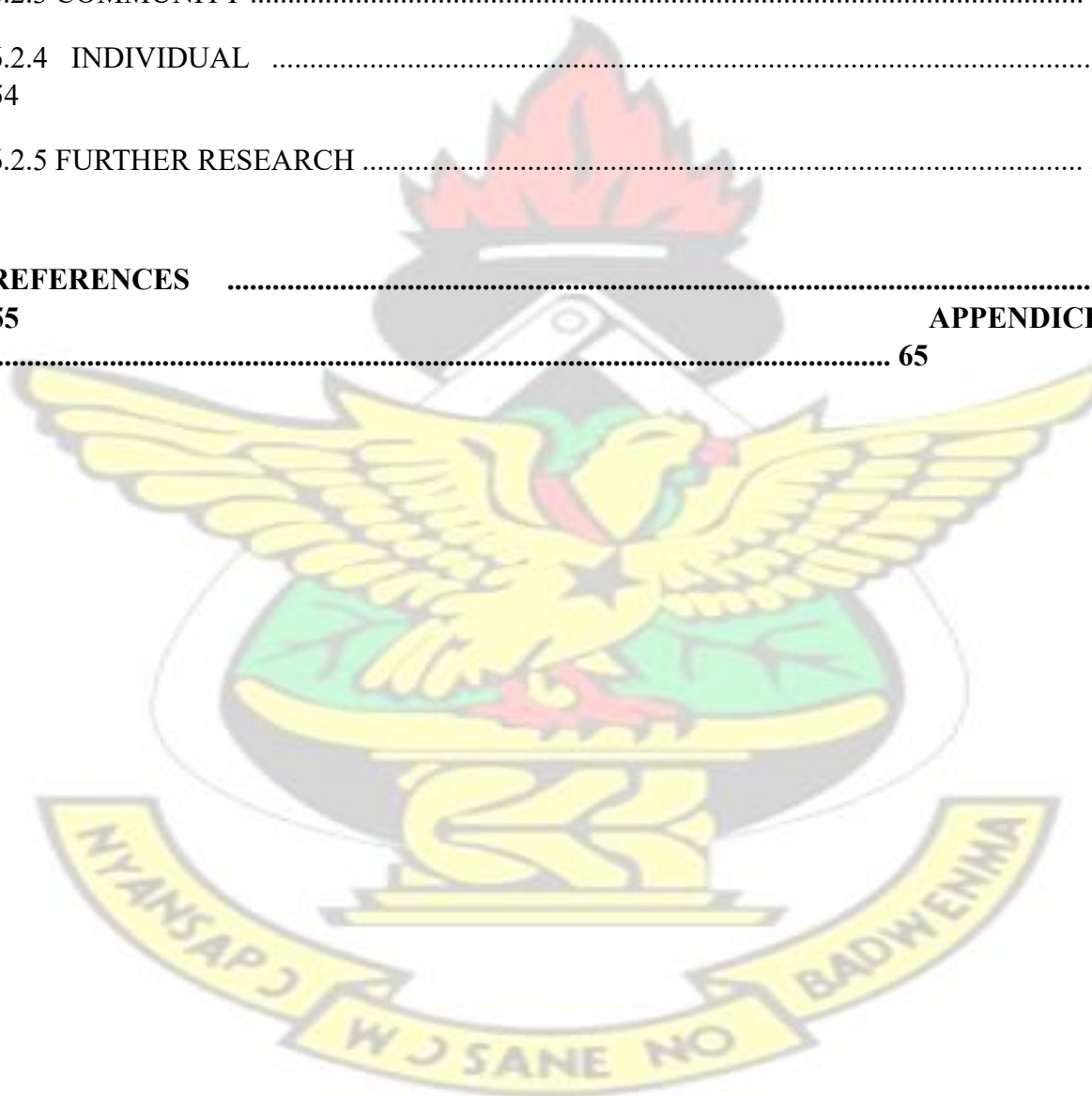
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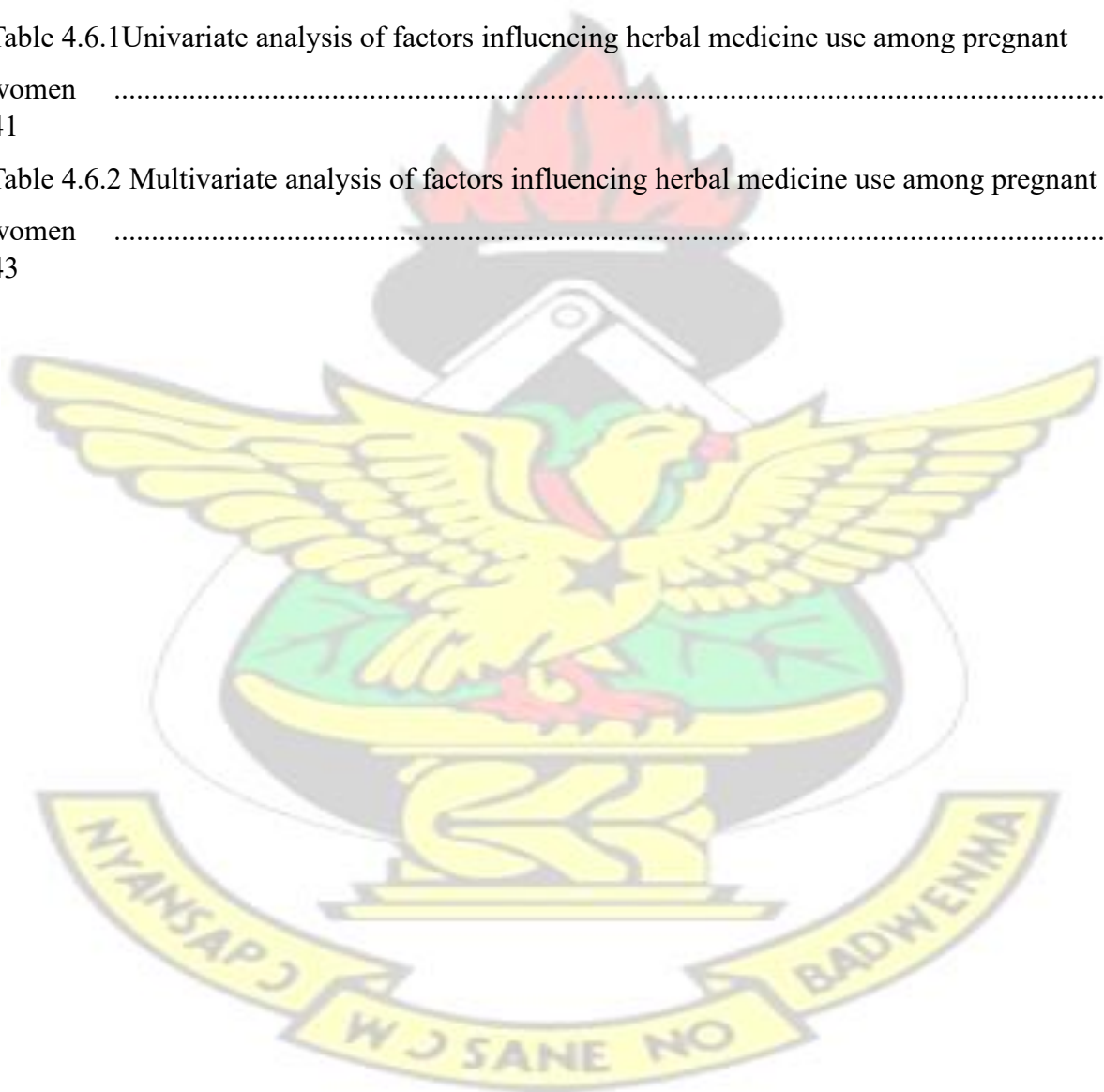
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LIST OF ABBREVIATIONS

CAM Complementary and Alternative Medicine

GHS Ghana Health Service

GFR General Fertility Rate

TFR Total Fertility Rate

GSS Ghana Statistical Service

HM.....Herbal Medicine

MP Medicinal Plant

GDHS Ghana Demographic and Health Survey

TCM Traditional Chinese Medicine

CHPS Community Based Health Planning Services

WHO.....World Health organization



ABSTRACT

Background: Prior knowledge, perception, and some demographic characteristics are key determinants of the use of herbal medicine among pregnant women before, during and after pregnancy. Numerous studies have come out with different results. Studies in the past have either confirmed already discovered reasons for Complementary and Alternative Medicine use during pregnancy or revealed otherwise. **Objectives:** This study sought to access the use of herbal medicines by pregnant women in the Obuasi municipality. **Methods:** A crosssectional study design was conducted among pregnant women who have used Herbal preparation in their previous pregnancy at Obuasi municipality. A simple random sampling approach used to recruit participants. Data were collected using a structured questionnaire assessing the specific objectives of the study. Data obtained were analyzed using STATA Version 14.0. Descriptive and inferential statistical analyses were carried out. Relationships between categorical variables were analyzed using the Pearson chi-square test at a significance level of $P < 0.05$. **Results:** A sample of 300 women participated in the study. The mean age of the respondents was 33.7 ± 5.5 years. The results showed that 52% of respondents has ever used herbal medication (HM) and 66.7% of these people believed herbal preparations were cheaper and that orthodox medication was more effective (55.3%) than herbal medicine. A larger proportion saw no adverse effect in the combination of both orthodox and herbal medicine (70.3%). About 52.6% of women knew the effects of herbal medicine use. Factors such as the number of pregnancies which HM was taking for [AOR = 2.14; 95% CI. = 4.83-9.5], the stage of the pregnancy [AOR = 9.71; 95% CI. = 1.9-14.73] and the ability to consult other people on HM for details [AOR = 3.13; 95% CI. = 1.73-5.36] were factors that influenced a woman to use HM during pregnancy. **Conclusion:** This study explored the knowledge, perceptions, and utilization of herbal medicine among pregnant women in the Obuasi Municipality of Ghana. Many pregnant women reported positive perceptions and attitudes towards herbal medicines as well as using such therapies frequently. Sensitization of the community on the effects of herbal medicines on pregnant women and their unborn babies is key.

Keywords:

Herbal Medicine, Pregnancy, Knowledge, Perception, Effects

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Herbal medicine has been used for disease prevention and treatment of ailments worldwide. Even though herbal medicine is easily available as compared to other medicines, the safety issue during pregnancy is a concern (Tariku, 2018). Herbal medicine is the study or use of medicinal herbs to prevent and treat diseases and ailments or to promote health and healing (Merriam Webster dictionary).

Globally, the utilization of Complementary and Alternative Medicine (CAM) in pregnancy accounts for 69% as this practice is common in the United States of America (USA) and the United Kingdom (UK). A study conducted by Kalder et al. (2011) shows that in America 69% of women are using CAM, 57% in the UK, and 51% in Germany. This result was later confirmed by Strouss et al. (2014). There is a high likelihood that these figures would be higher in the African -sub-region. In a study carried out to obtain information about plants being utilized for the treatment of gynaecological and obstetric diseases, thirty-two plants from 21 families were recognized in the survey for the usage of 19 different gynaecological and obstetric disorders (Wet & Ngubane, 2014) . The outcomes of the survey were compared with literature from various scientific databases and the result was that 16 out of the recorded 32 plants were being found for the first time in the literature to be used to treat these conditions. Herbal medicine (HM) has been in use for decades, the problem arises when newly untested and unproven mixtures of various plant parts not previously known or used are incorporated into treating people, especially pregnant women (Wet & Ngubane, 2014).

The usage of HM by pregnant women with access to health care delivery is very common (Peprah et al., 2018). Even though these women attend antenatal clinics and are educated to avoid these herbal preparations, they still patronize their usage.

The high patronage of HM usage in the community by pregnant women can be assigned to its long-standing incorporation into the culture of the community and its perception as its indigenous medicine (Mothupi, 2014). The hesitance to part ways with herbal medicines amid evidence of poor scientific on safety is perhaps a reason for the lax in the regulatory framework for traditional herbal practitioners in many countries, making it possible for people to access and use herbal medicines without control.

To evaluate the occurrence of self-medication among pregnant women in Mexico, a sample of 1798 women were interviewed. The occurrence of self-medication was found to be 21.9% in the studied population (Alonso-castro et al., 2018).

1.2 Problem Statement

Although pregnant women access health facilities, there still exists an inadequate knowledge of Complementary and Alternative Medicine (CAM) usage in pregnancy. There is limited disclosure of CAM usage by pregnant women to midwives and health attendants (Bowman *et al*, 2018). The patronage of herbal preparations among pregnant women is a common practice in Africa, especially in rural areas lacking health facilities and trained personnel (Van Andel *et al* 2015).

Even in places where such facilities are readily available, the beliefs and traditions of the people have not allowed them to entirely embrace modern practices of managing pregnancy and all its related issues. In Southern Ghana, enema use believed to facilitate birth and solve fertility

problems was mentioned by all respondents interviewed from different ethnic backgrounds according to a study by Van Andel *et al.*, (2015).

As it stands, there is little or no existing information about the direct causes of maternal deaths and other factors that are influenced by the use of herbal medicine by pregnant women. As such, although the influence of complementary therapies on maternal health has attracted the attention of health experts, researchers and policymakers worldwide, lack of evidence and representative records of the problem at hand limits the provision of maternity James *et al.*, (2018).

In the instance of birth complication emergencies, health professionals face difficulties in managing such situations especially when they have little or no idea about the kind of herbal medicine previously taken by the woman. The long- and short-term resultant effect of using both herbal and orthodox medicine simultaneously is still unknown according to recent studies (Pound *et al.*, 2005).

1.3 Significance of the Study

This study focuses on the different factors that affect the usage of HM by pregnant women as well as the prevalence of this issue in the Obuasi Municipality. The study outcome would be useful for health institutions in Ghana and beyond. The findings from this research would assist individuals to identify the key causes of HM usage in the study area and further assist other researchers in the management of health situations as well as those interested in conducting a study related to pregnant women and HM usage.

The outcome of the study would be added to the existing literature for further studies.

Finally, policymakers would use the study findings to plan and implement measures to improve the quality of maternal health by educating pregnant women on the use and effects of herbal preparations.

1.4 Research Questions

1. What is the knowledge pregnant women have about the effects of herbal preparations on their unborn babies and themselves?
2. What is the use and perception of pregnant women who use herbal preparations during pregnancy?
3. What is the relationship between the various factors and herbal medicine use in pregnancy?

1.5 General Objectives

To determine the factors that influence the use of herbal preparations by pregnant women in the Obuasi Municipality.

1.5.1 Specific Objectives

1. To determine the knowledge pregnant women have about the effects of herbal preparations on their unborn babies and themselves.
2. To ascertain the use and perceptions of pregnant women who use herbal preparations during pregnancy.
3. To determine the relationship between the various factors and herbal medicine use in pregnancy.

1.6 Conceptual Framework

The study was guided by a conceptual framework that seeks to explain how the healthseeking behaviour of pregnant women is influenced by several factors. The determinant of treatment and medication uptake is mediated by several factors including the patient, prescriber and organizational factors. These factors each play a unique way that influences the health decision one may take and several theories have been propounded to explain these behaviours. Among these theories is the famous health belief model developed by Rosenstock, (2004). This theory postulates four major components of health behaviour motivation namely perceive susceptibility, perceived severity of health condition, perceive benefits from the treatment choice and barriers to the treatment choice available to them.

This study focused on one of these components, which is how the individual perceives the treatment options available to them and the benefits they stand to gain from taking into consideration all other determinants. In our study of the use of herbal medication by pregnant women, factors that may possibly influence their choice is how they perceive the effectiveness of the orthodox medication available to them in solving their problem, the socio-economic status of the patient, cultural beliefs, level of education, age, access, parity among others (Yarney *et al.*, 2013; Onah *et al.*, 2006; Sejfeskog *et al.*, 2006).

These factors usually affect most of the decision's individuals take towards their health. It is based on this premise that his framework was drawn from in order to explain the motivation behind the choice of care and treatment behaviour an individual may opt for when they need care.

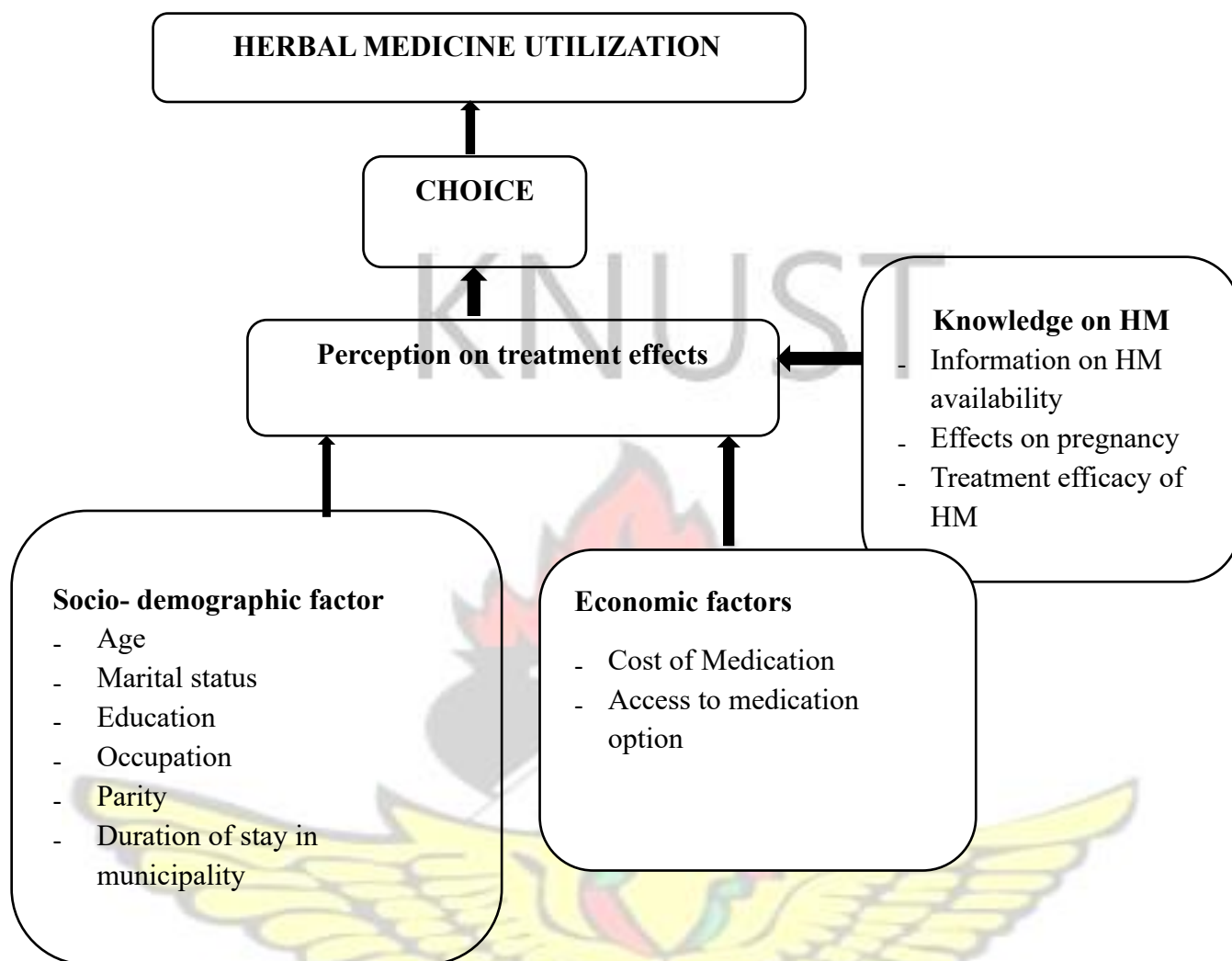


Figure 1.1: Conceptual framework for herbal medicine utilization among pregnant women

1.7 Organisation of the Study

This chapter is categorized into five sections. Chapter one presents the background to the study, statement of the problem, research objectives, research question, significant of the study and overview of the methodology. The section also outlines the justification of the study, limitation scope of the study and organization of the rest of the chapters. Chapter two is devoted to the literature review where various theories and concepts are outlined in line with the objectives and hypothesis of the study. The section ends with the empirical review where various work is done on each objective are presented and gaps identified. Section three gives an overview of the study methodology, where various strategies and procedures are presented, the research

design, population, study area, sample size, and sampling techniques are equally presented. The method of data correction and procedures are also presented. Data collection methods were explained in the chapter Ethical consideration are also considered in the chapter.

Section four presents the results of the study, whereas chapter five offers discussion from the findings and finally chapter six gives the recommendation, summary, and conclusion of the study.

1.8 Limitation of the study

This study just like other researches may have some limitations. However, precautionary actions were taken to ensure that the methods and strategies used were consistent with other studies. Maximum efforts were made to ensure the reliability and validity of the questions used in this study. There is a perception out there that herbal medication is frowned upon by most health workers and for that matter, users usually want to keep it a secret from the practitioner. There is a tendency that some of the respondents interviewed may only give a favourable response with the aim of impressing the researchers. Therefore, the tendency of respondents giving answer that does not reflect the real situation 100% could not be ruled out in this study. Notwithstanding all these limitations, efforts were made to explain the study to the respondents and further assured them of adequate confidentiality regarding the information they are giving out. Also, adequate probes were made to ascertain facts as they were. These efforts made the generalization of results a possibility.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Herbal Medicines

Herbal medicine in the wake of time has been used as one of the most effective and efficacious means in the management of medical conditions. Global estimates suggest that over 35,000 to 70,000 plant species have been used for medicinal purposes at a point in time among various cultures (WHO, 1998). The majority of the world population depends on herbal and traditional medications to satisfy their health needs (Eisenberg et al., 1998). These herbal remedies are usually the first line of treatment for most acute conditions in health services, especially in remote parts and poor communities, due to its accessibility, availability, and affordability (Bonjar, 2004; WHO, 1998).

However, the influx of synthetic medicines for some time relegated the importance of herbal medicine to the background. Even though the effectiveness of synthetic drugs in the management of the medical condition is undoubtedly accepted worldwide. However, despite its global acceptance, there are dozens of issues surrounding its use and applications which cannot be overlooked (Ghazali, Bello and Kola-Mustapha, 2019). The issues about its side effects, challenges of accessibility and affordability among other has caused a rising interest in the application of natural remedy in management of medical conditions (Shetti *et al.*, 2011; Verma & Singh, 2008).

The constant increase in the global awareness of these side effects and safety concerns has gradually shifted attention back to herbal medication or what is usually referred to as alternative medicine. Plant-based medication appears to be one of the better alternatives as they are known to have the minimal danger to consumers compared to the consumption of synthetic the ones

(Varma & Dubey, 1999). The ancient use of plants and herbs in the management of basic disease has led to the increased interest in different investigations centring around traditional medicinal plants as potential breakthrough in replacement of the synthetic medicines (Bonjar, 2004). The continuous increase in the microorganism resistance to chemical antibiotics has called for the need for new class of drugs with low toxicity and efficient in handling some of these challenges as documented by researchers (Nenaah & Ahmed, 2011). This evolution of knowledge in the herbal medicines, availability, accessibility, and affordability in acquisition of herbs has led to the discovery and invention of many effective remedies and also filtered out dangerous, toxic and non-active remedies (De Boer & Cotingting, 2014).

The growing popularity of traditional remedies and herbal medicines, in particular, motivated the World Health Organisation to come up with a standard definition as to what constitutes traditional medicine. According to them, it is “the health practices, approaches, knowledge, and beliefs incorporating plants, animals, 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”(Bodeker & Burford, 2006). Herbal medicine is the plant-based materials or products with healing properties or health benefits for humans acquired from one or more plants which are either in the raw or processed state. They basically include herbs, herbal materials, preparation, and finished herbal products which contain ingredients with therapeutic properties toward human health (WHO, 1998). In as much as herbal medications are gaining global acceptance and popularity in recent times for various reasons. They are not necessarily safe because they are simply organic and natural, as continuous usage of some herbal medications has resulted in serious complications and adverse reactions to consumers. It has been reported that some of these plants contain chemicals that contain carcinogenic properties which continuous usage could lead to hepatotoxicity (WHO, 1998). This means that herbal medication will only be beneficial to users when used properly. But ironically because

of the notion that herbal medications are natural, consumers assume these medications without paying much attention to the potential harm it can bring to them.

2.2 Prevalence of herbal medicine use in pregnancy

Pregnancy is a condition associated with a wide range of physiological changes resulting in many health problems, including vomiting, heartburn, nausea, and constipation. These disorders, according to Lisha and Nisha (2015), often cause pregnant women to adopt selfmedication including the use of herbal medicine thus, increasing the use of herbal preparations across the globe with women as the main users of these alternative therapies, especially during pregnancy.

Globally, the incidence of herbal medicine usage among pregnant women ranges between 7% and 96% (Hall *et al*, 2011). However, differences exist in the utilization rate of herbal medicine between developed and emerging economies which is largely attributed to cultural differences. For instance, in developed countries like Australia, United Kingdom, Italy, Norway, and the United States, the use of herbal medicine among pregnant women ranges from 10% to 56% (Haavik, 2010).

However, in developing countries, particularly sub-Saharan African countries, the prevalence of use of herbs among pregnant women is estimated to range from 30% to 70% indicating a higher prevalence of herbs used in Africa than the Western world (Malan, 2011). For instance, about 35% of pregnant women in Cote d'Ivoire, 31% of pregnant women in Nigeria, 33% of pregnant women in South Africa and 42% of pregnant women in Tanzania use herbal medicine. This relatively high prevalence is a result of three main factors: lack of flexible legislation regulating the distribution and purchase of herbal medicine; cultural and personal beliefs and; the high cost of, and low accessibility to conventional medicine and health care (Yarney *et al.*, 2013).

The use of traditional medicines and herbal based-medicine, in particular, has become an integral part of the Ghanaian health system in the management of health conditions (Boadu, 2017). However, uniformity in its mode of application and usage is faced with several challenges. Even though some attempts have been made to document herbal medicines usage, there are still load of information about the various its uses that are yet to be uncovered due to the cultural diversity surrounding these remedies (Boadu, 2017). These diversities have made proper documentation and standardization of the usage of these medications a difficult task to complete in ensuring drug safety. Despite these shortfalls surrounding herbal medications, the ordinary Ghanaian feels it is safe to use herbal medication because they inherited knowledge of it through past generation. This perception of herbal medication has become so popular that pregnant women also embrace its use.

2.3 Common application and uses of herbal medications in the management of medical conditions

Herbal medication particularly those used in the traditional healing system has been used for various conditions for several centuries. Even though herbal medicine is basically from plants, their mode of application varies just as its usage. Various parts of plants and trees such as the roots, stem, bark, leaves and even the fruits are processed differently (Duru et al., 2016). These herbal medications are usually processed and consumed as either boiled, dried, grounded, either in a raw state or refined. Whiles some herbal medicines are used for acute conditions, others applied them for chronic conditions as well as pregnancy-related conditions (Duru et al., 2016). Herbal medicines are known for its potency the treatment of a wide range of health conditions such as diabetes, malaria, migraine, infertility, fibroid, hepatitis among others (Falodun, 2010; Okanlawon *et al.*, 2011; Van Andel *et al.*, 2012; Van Andel *et al.*, 2015).

For instance, Hanafy *et al.*, (2016) reported that herbal medications are mostly used as an analgesic for acute conditions such as headache, malaria, dental conditions and as

cardiovascular conditions for chronic conditions. In some instances, they are used as penicillin in the management of heart-related conditions in traditional households. In Ghana, for instance, herbal medicines are used as the first line of treatment for malaria (Ghazali *et al.*, 2019). In the case of pregnant women there is number of reasons that motivate them to use herbal medicine. Whiles others are using them to alleviate pregnancy-related symptoms such as vomiting (Bayisa *et al.*, 2014; Duru *et al.*, 2016), others also use it to enhance foetal growth, prevention of tears and facilitation of easy delivery (Mureyi *et al.*, 2012; Hanafy *et al.*, 2016).

2.3.1 Traditional usage

The African women greatly depend on traditional medicine primarily to handle certain conditions that they felt conventional medication cannot adequately handle. For instance issues which are believed to have spiritual origin, fertility issues, birth control, pregnancyrelated complication among others. (Ahmed *et al.*, 2018; De Boer & Cotingting, 2014).

Unlike the orthodox use of modern medication which has documented and vivid instructions, traditional medicine takes many forms in their application and administration. While some of the usages are guided by superstitions, others are guided by common instruction just as we have in the modern medicines (Abasiubong *et al.*, 2012; Bayisa *et al.*, 2014; Nordeng *et al.*, 2013; Nordeng *et al.*, 2011). For instance Mureyi *et al.*, (2012) reported that some pregnant women believe that bathing with some herbs protects them from evil spirits, others also take herbal concoctions to widen their birth canal and avoid perineal tearing during delivery. With these two conditions there is a number of ways that such conditions are managed under the herbal medication administration across cultures. This among other reasons make the usage and application of these remedies difficult to comprehend in order for stakeholders to streamline usage to ensure safety. The common methods of preparation and usage of these herbal medications are through infusion, squeezing, chewing, ingestion, inhaling, concoction as well as maceration (Bayisa *et al.*, 2014). In pregnant women, it has been reported by several studies

that, administration of traditional and herbal medicines are usually included oral consumption, intra-vaginal and rectal insertion (Mureyi *et al.*, 2012; Varga & Veale, 1997).

As reported earlier in other pieces of literature, even though the ultimate intention for the use of such herbal medication was to improve health condition, but eventually lead to negative outcomes (Ernst, 2002; Ghazali *et al.*, 2019). Addo, (2008) reported in his study that, oral, rectal and intra-vaginal route administration of herbal medicine is the most common in Ghana. However this mode of administration is very alarming since they may worsen the woman's pathology including those uterine fibroids, infertility, and malignancies.

2.3.2 Combine use of Conventional and herbal medication

The ubiquitous nature of herbs, leaves, and trees in our environment make easy for people to have access to them and turn them into concoctions and other herbal preparation. And being a locally prepared connection, certain amount of traditional importance is usually attached to it, and for that matter its usage is unrestricted even in pregnancy (Abasiubong *et al.*, 2012).

The local nature of these herbal medications is perceived by pregnant women to be safe to consume, effective and fast in delivering results and for that matter, its consumption is done with little caution. (Fakeye *et al.*, 2009; Nyeko *et al.*, 2016). Because of this perception most pregnant women find it difficult to abandoned their usage even when they receive explicit instruction from health professionals. They rather conceal and use this herbal preparation concurrent with conventional medicines that have been prescribed for them. For instance, Addo, (2008) reported that about half of the Ghanaian women who visit health Obstetrics and Gynaecology Department use herbal medication at the blind side of health workers. A similar study in Nigeria reported that most pregnant women combined the consumption of herbal preparation such as gin and kola nut with antibiotics and other conventional medication (Abasiubong *et al.*, 2012). Meanwhile there is a pool of evidence which indicates that early exposure to these substances by the unborn baby may lead to serious morbidity (Tiran, 2003).

2.4 Knowledge of Pregnant Women on the Effect of Herbal Medicine

In neighbouring Nigeria, Ghazali *et al.*, (2019) conducted a study in the Outpatient Department of the University of Ilorin Teaching Hospital (UITH) to know the extent to which patients use herbal medicine. According to him, 100% of the outpatients were familiar with herbal medicines, 67.86% had used herbal medicines in the past and 25% were currently using herbal medicines at the time of the study.

It was also found that 54.35% of these patients use herbal medicines in no specific dose, 47.83% use the herbs with other additives, and 39.13% take these herbs along with orthodox medicines. A total of 13.73% of the respondents preferred to use herbal medicine when sick and another 35.29% preferred a combination of herbs and orthodox medicines. If 54.35% of the respondents take herbal preparations in no specific dose, this further shows the extent to which many people have little or no knowledge of the various herbal medicine they use. Moreover, due to the lack of knowledge on the effects of these drugs, respondents are mostly found mixing it with orthodox medicines without the slightest idea of the resultant effect of the mixture.

Similarly, purgative enemas believed to help solve female infertility and facilitated birth were popular in Ghana and Gabon than in Benin (Van Andel *et al.*, 2015b). Out of the 213 plant species that were used in enemas in the three countries, 26 could not be identified to family level due to lack of botanical specimens or good quality voucher material.

Traditional Chinese medicine (TCM) has been able to evolve from single agents to mixtures of various components based on the fact that these processes have been documented for centuries past (Ndhlala *et al.*). Documented records provide a basis of knowledge from which advanced developments can be made. This is in contrast with other parts of the world where new and mostly unregulated herbal products are in circulation always. The lack of reliable information on herbal preparations and their effects has made it difficult for many health workers and researchers recommend it for use.

Many herbal preparations are not subjected to modern quality control checks and as such, consumers, as well as producers, are unaware of trace metals, and other harmful substances that might find their way into these mixtures. Okem *et al.*, (2012) subjected some herbal products to Inductively Coupled Plasma-Optical Emission Spectrophotometry (ICP-OES). The results revealed traces of Mercury (Hg) and Lead (Pb) in doses exceeding the normal limits set by the WHO. These substances may not be harmful on their own, but their interaction with other constituents of herbal preparations may result in mixtures that have adverse effects and as such, more research needs to be done on the herbs and materials used for herbal preparations.

Medicinal Plants (MPs) are vital for the development of new drugs. According to the WHO, about 25% of modern medicines have been developed from plants and their extracts being used in traditional medicine. In Ghana, Mali, Nigeria, and Zambia, about 60% of first-hand treatment in homes is accounted for by herbal medicines (Wang *et al.*, 2015). As knowledge in a particular field increases and is being improved, it gains attention. Over the past decade, CAM use has increased considerably worldwide, and this can be mainly attributed to the increase in knowledge in the area. Herbal medicines, one of the most widely used CAM therapy in the world has also seen a significant boost. As Kennedy *et al.*, (2013) noted, the prevalence of herbal medicine use ranges from 52-58% in Australia and the United Kingdom, 40-48% in Italy and Norway and 6-9% in the United States and Canada.

Lack of records on the safety of many medications used during pregnancy is still a major issue. For instance, 86(15.7%) of respondents in a survey by Cleary *et al.*, (2010) were observed to have used medications with the potential of foetal harm. This further tells the extent to which a lack of existing knowledge on the adverse effects of CAM use by pregnant women is a major challenge.

2.5 Use and Perceptions of Pregnant Women who use Herbal Medicines during

Pregnancy

According to Al *et al.*, (2018), 37% of a sample of 297 pregnant women who completed a survey in Saudi Arabia used herbal medicine by their own initiative, 33% based on counsel from families and 12% based on information from friends. Furthermore, 19% of these participants showed a positive attitude towards the use of herbal medicine during pregnancy.

However, the number of women with a positive attitude was higher among pregnant women with a lower educational level. The outcomes of this study tell the extent to which the stance of a woman on herbal preparations can be easily changed based on her immediate environment, especially when she has little or no educational background. Furthermore, Ahmed *et al.*, (2018) noted that many pregnant women used Medicinal Plants (MP) for the ease of pregnancy-related symptoms such as nausea and vomiting, stimulation of labour and to facilitate childbirth. Some MPs were also taken as nutritional supplements and only a few adverse effects were reported. This is in line with the results of KIssal *et al.*, (2017) who found out that pregnant women often sought to use herbal products with the objective of treating health problems as well as for preventive measures. This is also supported by the proceedings of a study by Al-Ramahi *et al* (2013) where 82.5% of the 120 women who used herbs during pregnancy preferred to use herbs because they thought it to be safer than normal medications. Also, 36.7% out of this number took to herbs through the influence of family doctors.

Safety and effectiveness is a major perception of the many pregnant women who use herbal medicine (James *et al.*, 2018). Although there is to some extent standard health equipment available in Ghana, only a few hospitals and clinics in the big cities have access to them. The stress of having to travel long distances to seek health care coupled with financial constraints of women living in rural areas has made them settle for what is available and has served them for as long as they know - traditional medicine.

In a study aimed at finding out pregnant women's attitudes and perceptions about traditional and modern midwives and its impact on their behaviour towards seeking health, Peprah *et al.*, (2018) conducted a survey in some rural communities in the Birim South District. Most Ghanaian women are familiar with traditional medicine and methods and have a positive attitude toward local midwives based on their own beliefs, philosophies, and experiences. Many women in rural communities only see the need to patronize modern midwives when there occur serious complications during childbirth.

Towns & Van Andel, (2016) noted that women often use wild plant species to enhance and maintain their health throughout the duration of pregnancy irrespective of where they choose to obtain health care. This is different from what Vealea *et al.*, (1992) observed in black South African women. In their case, herbal medicines were rather used to augment or induce labour.

Although many health workers are indifferent to the use of herbal medicine by their patients, Kennedy *et al.*, (2013) noted a slight deviation. In a survey across 23 countries, 1 out of 5 women used herbal preparations through a physician's recommendation. Many factors are responsible for a woman's choice of medicinal approach but her own perception is the most important.

Few programs are available to control the adverse effect of self-medication in many developing countries although there is increasing evidence of its use Abasiubong *et al.*, (2012). Five hundred and eighteen pregnant women were interviewed for a study aimed at determining the potential risk and hazards of self-medication in the Akwa Ibom state of Nigeria. Out of this number, 375(72.4%) indulge in one form of self-medication or the other, and out of this number, 47 (9.1%) used a mixture of local herbs together with other drugs all with the aim of either protecting themselves from witches, poor sleep, fever, vomiting, and infections. Sedatives, alcohol and kola nuts were among the substances noted to be used in self-medication by pregnant women in the study. Among Hispanic women, the rates of use of prescription

medication among pregnant women is two-and-half times higher among women with a history of medical problems Bercaw *et al.*, (2010) which further satisfies the claim that most pregnant women seek proper medical attention only when complications arise in their use of herbal medicine for general health or to increase their energy level.

According to Alspac *et al.*, (2011), pregnant women in the UK use CAM to have control over their health, to continue with a preferred method of treatment, or choose a treatment method not covered by modern medicine. Some perceived herbal medicine to also be a safer treatment option in pregnancy than with other studies. Bowman *et al.*, (2018) also observed the perception of safety in their study as well as the choice of pregnant women based on their familiarity and cultural heritage of CAM use. These women used herbal medicine as they saw it to be their decision, a more natural procedure and not what they have been instructed to do as is common with prescribed medicine.

2.6 Relationship between socio-demographic and other Factors and Herbal Medicine Use

Rambod *et al.*, (2018) noted a significant association between the use of herbal medicine and age, gender, marital status and level of education. Women were found to use herbal preparations more than their male counterparts. Similarly, K1ssal *et al.*, (2017) observed that 47.3% of women interviewed at obstetrics and gynaecology clinics of various hospitals in Turkey had used at least one herbal preparation during pregnancy. Family size and structure, educational level, working status of the women all had a significant effect on the use of herbal products. Also, how frequently a woman used herbal products during pregnancy varied from culture to culture as well as regional differences. The lack of health facilities in the rural areas of many African countries leaves women with no option but to rely on traditional medicine for their healthcare needs (Kamatenesi-Mugisha and Oryem-Origa, 2007). Although many studies still claim the lack of substantial knowledge by researchers on conditions that influence the use of alternative medicine by patients, being a woman and low level of education are established

factors (Leach *et al.*, 2017). The common use of MPs during pregnancy in Africa as well as the slow modernization of healthcare suggests that MPs will continue to play an important role in the near future (Ahmed *et al.*, 2018).

According to Awodele *et al.*, (2012), medical practitioners in Lagos who supported herbal medicine use by their patients still believed it was inadequate to completely treat a patient. The use of herbal medicine is highly linked to pregnancy-related health conditions such as; anxiety, fatigue, back pain, sleeping problems, etc. As such, women with these conditions were more likely to use herbal preparations Frawley *et al.*, (2015).

In rural Ghana, pregnant women are familiar with traditional methods and medicine and as such, only interventions through education, awareness and community sensitization can adequately help tackle this challenge. Moreover, this education should be targeted at husbands and mothers-in-law who are very key in the decision making of such issues relating to pregnancy and childbirth (Peprah *et al.*, 2018). Accessibility and availability of products are also very important in determining the choice of a woman. Many herbal preparations are limited in the nutritional properties they offer, but since they are cheap and also easy to come by, many pregnant women opt for them (Towns & Van Andel, 2016).

Russia has the highest reported rate of herbal medicine use in Europe (69%) (Kennedy *et al.*, 2013), but most important were the circumstances under which these medicines were used. Most of the women were either having their first child, consuming alcohol, non-smokers and were current students. Although this is slightly in contrast with the outcomes of other studies, the educational level of a woman is a significant factor throughout various study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section details the methodological approaches and techniques adopted in carrying out the study. It highlights the study design, population studied, study area profile, and other important steps that were followed to carry out the entire study. The study tools and sampling techniques that were used have also been described in detail in this chapter; how the population and sample size for the study were chosen were described. Finally, it gives details of the definition of the various study variables that were looked at. It also emphasizes on the framework of cross-sectional studies as well as its use.

3.2 Study Type

The research design adopted for the study was cross-sectional. Study design help to explore the relationship between HM use among pregnant women and other factors such as age, marital status, educational level and occupation in the Obuasi Municipality. Cross-sectional studies are methods of analysis that are usually employed when data from a population or its characteristic subset at a specific point in time is to be analysed. It is preferred when the existence and extent of causality of one or more independent variables on a dependent variable are to be observed. They are descriptive studies aimed at describing features of the population such as the incidence of an illness or support presumptions of effect and cause.

Pregnant women who accessed care in the Obuasi Government Hospital and AGA Health Foundation clinic were interviewed at both facilities. A quantitative approach was employed in the collection of the data. Respondent's knowledge of herbal medicines, its usage, effects on the unborn child among other things was examined.

3.3 Study Area

The Obuasi Municipality apart from its popularity as a mining community is also known as a commercial powerhouse. Over the years, illegal small-scale mining carried out in the study area has led to the destruction and contamination of many water bodies and flora. Herbal preparations are made from different parts of plants such as; roots, leaves, etc. The use of harmful chemicals for these small-scale mining which is not properly checked finds their way into water bodies and is as well precipitated into the soil and absorbed by plant roots.

Although not all herbal preparations are harmful to pregnant women who use them, the possibility that these plant extracts might have been exposed to harmful substances such as Lead (Pb) and Mercury (Hg) cannot be overlooked. This background makes plant extracts from the Obuasi Metropolis prone to harmful substances that are harmful to the health of all individuals who take herbal medicine.

Anglo Gold Ashanti (AGA) Health Foundation has been in operation for the past eighty-six years providing high quality and unsurpassed health care to employees and dependents of AngloGold Ashanti, the Obuasi Municipality and its environs and the entire Ashanti Region at large. It has a trusted brand with the state of art of technology, client-centered and operates within the framework of the ethical and legal standards in providing evidence-based healthcare. It is the second-largest hospital in the Ashanti Region with 102 beds among the leading referral centers in the region. Some of the services the hospital provides include Outpatient and In-patient care, Physiotherapy clinic, Reproductive and Child health services among others (AGA health Foundation, 2017).

Obuasi Government Hospital is a leading hospital in Obuasi Municipality. It was built by Ashanti Goldfields Company Limited in 1985 and obtained a Hospital status in October 1996. It has a bed complement of 74 and serves a population of about 194,288 people. It strives to be a center of excellence in healthcare delivery in the Obuasi Municipality and Ghana as a whole.

The hospital provides Outpatient and Inpatient care, Antenatal Care, Postnatal Care, Surgery, Reproductive and Child health services among others. (Obuasi Government Hospital, 2019).

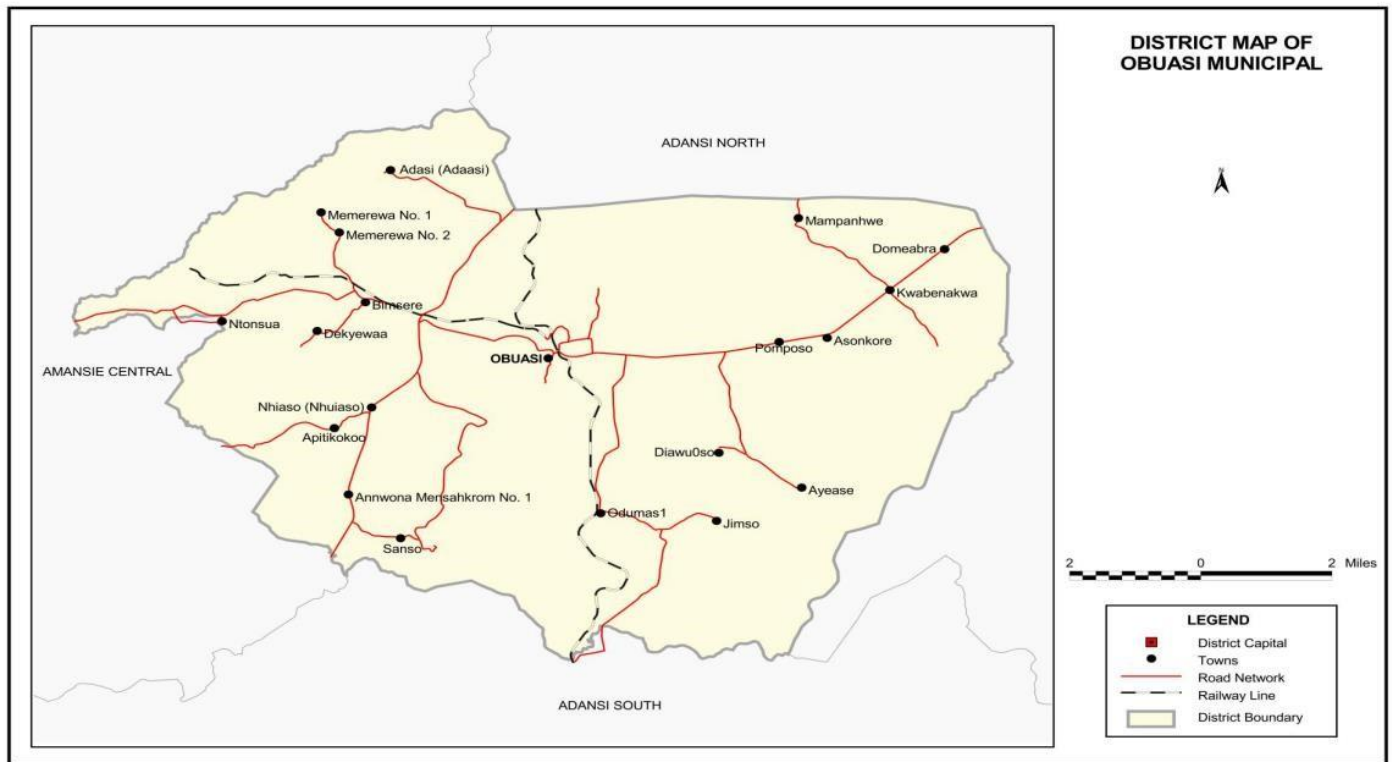


Figure 3.1: Map of Obuasi Municipality

3.4 Study Population

The population of interest for this study consisted of all pregnant women who attended antenatal clinics and general hospital reviews in the Obuasi municipality, specifically Obuasi Government Hospital and AGA Health Foundation clinic for the past six months prior to the commencement of this study. Women who had already given birth and were included in the study. The recruitment process was limited to only those who had used herbal preparations during pregnancy in either their previous pregnancies or current ones.

3.4.1 Inclusion and selection criteria

1. All pregnant women between 18-45 years who have delivered before and have ever used herbal preparation in any previous pregnancy were included in this study.
2. All pregnant women who have ever given birth to at least one and access care in the municipality were included.

3.4.2 Exclusion Criteria

1. All newly pregnant women who have never delivered before were excluded from this study
2. All pregnant women who attended the clinic or gave birth outside the two facilities were not enrolled in the study

3.5 Sample strategy and recruitment

3.5.1 Sample size

The sample size was calculated using the Statcalc of Epi info. The population used in the sample size was the average monthly antenatal clinic attendance at the two hospitals which was 1250. The estimation took into consideration a Confidence Interval (CI) of 95% and a margin error of 5%. This was used to arrive at a sample of 294 and an assumption of 10% non-response rate was incorporated in the estimation. These values were input into the Epi Info software which automatically generated a sample size of 300. A Simple random sampling technique was utilized to select pregnant women from the designated classes as only those who have used herbal preparations were targeted.

3.5.2 Selection of study participants

The study employed a mixed sampling method to select the study respondents. Both nonprobability and probability sampling techniques were used to identify the 300 respondents

who were interviewed from both antenatal clinics and the general outpatient department of the two hospitals. Pregnant women who were visiting the outpatient department were included in order not to miss those who had ever used herbal medicine and are visiting the hospital for care other than normal antenatal visits.

A simple random sampling approach was employed to select the women at the antenatal clinics. The first woman was selected based on a predetermined sample interval. Every third pregnant woman who was in the queue waiting to be served was approached and rationale for the study explained to her and those who consented were enrolled in the study. Also, in the outpatient department, all pregnant women who were seen accessing care were approached and those who consented were recruited into the study. This procedure was repeated throughout until all the required 300 samples were arrived at.

3.6 Study Variables

The study was guided by objectives and a conceptual model that identified a number of variables that could influence the study outcome. Both dependent and independent variables were identified. The use of herbal medicine during pregnancy in managing health conditions and knowledge about its effects on the pregnancy was the main dependent variable used in the study.

From the study objectives and review of related literature, the following were identified as independent variables; socio-demographic factors such as age, marital status, education, and religious beliefs, number of pregnancies and births, the motivation behind the use of herbal medicines and perception on the efficacy of these medicines.

Table 3.1: Table of Study Variables

Specific objective	Dependent Variable	Independent Variable	Type of variable	Indicators
To determine a Pregnant woman's knowledge.	Knowledge of the effects of herbal medicine use during pregnancy	<ul style="list-style-type: none"> Awareness of the effects of herbal medicine use Effects of Herbal Medicine use on the mother Effects of Herbal medicine on the unborn baby Effects of Herbal medicine on the baby after birth. 	Categorical Categorical Categorical Categorical	Percentage of use how often respondent takes herbal preparations The type of preparation used Percentage of recorded effects/complications
To determine Pregnant women's perception of herbal medicine	Perception of pregnant women who use Herbal medicine during pregnancy	<ul style="list-style-type: none"> Herbal Medicines are cheaper than orthodox medicines Herbal medicines are effective than orthodox medicine The use of herbal medicine together with orthodox medicine is harmful 	Categorical Categorical Categorical	proportion of cost of herbal preparations percentage of various reasons percentage of response with effects of combining Herbal medicine and orthodox medicine use
To observe the relationship between various factors and herbal medicine use.	Relationship between Herbal Medicine use and various factors.	<ul style="list-style-type: none"> Age Education Occupation Marital Status 	Continuous Categorical Categorical Categorical	Relationship between herbal medicine and various factors.

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3.7 Data Collection Techniques

The data was collected from the respondents using a structured questionnaire. The researcher administered the questionnaire to the respondents personally and aided them to fill it out. The questionnaire consisted of both closed and open ended questions to adequately capture the perception of all respondents. The questionnaire was divided into sections, each focusing on the specific objectives of the study ensuring that all the relevant information pertaining to each specific objective was addressed. Data were collected on the demographic characteristics on respondent, information on the respondent's knowledge of herbal medicines, their use, effects on pregnancy. The questionnaires were drafted in English and were translated to the local language of the respondents. In order to avoid the distortion of the meaning of the questionnaires, they were directly translated in the local language Twi, because Obuasi is predominantly Akan speakers.

3.6. Pre-testing of questionnaire

The questionnaires were pre-tested at Bryant Mission Hospital with a sample of pregnant women between the ages of 18-45 years who have delivered before and have ever used herbal medicines in any of their previous pregnancies. This is due to the fact that it is one of the most frequently used facilities. The outcome of responses from the piloting activity was able to bring up issues that needed to be modified in the questionnaire. Corrections were made and final drafted tools were agreed on with the supervisor. The pre-testing of the questionnaire with respondents from Bryan Mission Hospital was done randomly to check the reliability of the tools and make necessary adjustments to the weakness identified.

3.7 Data Source and Type

This study basically aimed at studying the factors that influence the use of herbal preparations by pregnant women in the Obuasi Municipality. The analysis was based on information collected from pregnant women between the ages of 18 to 45 years attending the antenatal clinic in AGA Health Foundation and the Government hospital in the Obuasi municipality. The study targeted women who have delivered before and used herbal medicine in their pregnancies. The data collected included the age of pregnant women, marital status, educational level, frequency of use of herbal medicine in previous pregnancies, duration, and other factors.

3.8 Data Analysis

Data obtained from the field was subjected to a rigorous analysis using STATA Version 14.0 (Stata Corp, College Station, Texas USA). The rate of herbal medicine usage was estimated and socio-demographic and other factors influencing HM usage were also examined. The descriptive results of the analysis were presented in frequencies, means, and standard deviations. The study further employed an Inferential analysis to examine the relationship between some socio-demographic indicators and herbal medicine use in the Obuasi municipality using Pearsons' Chi-Square. Both Univariate and multivariate analyses were employed to predict independent factors believed to be influencing the use of HM using Poisson logistic regression. Variables that were identified to be independently significant ($p\text{-value} \leq 0.05$) in the Univariate model were added to the multivariate model. Also, variables that were not considered to be important but believed to be confounding were added to the model. Backward Stepwise logistic regression was employed to identify significant independent variables and also control for the covariates. The final model was then reported in chapter four. The significance level was maintained at the standard p-value of less than

0.05 with a 95% confidence interval.

3.9 Ethical Consideration

Ethical clearance was obtained from the management of the health institutions that were considered for this study and also from the ethical clearance Committee on Human Research, Publications and Ethics (CHPRE) of KNUST before the actual research began. Written informed consent was obtained from the study participants who voluntarily accepted to be part of the study after they were educated on the essence of the study. They were assured of the confidentiality of the information they provided and that it would be used solely for the purpose of the study objectives. The privacy and confidentiality of respondents were strictly observed as much as possible. The participants who agreed were interviewed individually in an isolated place to avoid “bystander effect” All the ethical principles were maintained to the latter during the conduct of the fieldwork.

3.10 Definition of terms

Herbal medicine - Herbal medicine is the study or use of medicinal herbs to prevent and treat diseases and ailments or to promote health and healing.

Pregnancy- The duration during which one or more off springs develop inside a woman.

Knowledge- Facts, information and skills acquired through experience or education.

Perception - The way in which something is regarded, understood or interpreted.

Effects – A change which is a result or consequence of an action or other cause.

Parity – The number of times a female has been pregnant.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents detailed results generated from field data collected from pregnant women visiting AGA foundation hospital and the Obuasi Government Hospital all in the Obuasi Municipality in the Ashanti region of Ghana. The results were presented in accordance with the study objectives and in tables.

4.2 Socio-demographic characteristics of respondents

From findings in table 4.1 below, the demographic characteristics of the respondents of the study showed that 130(43.3%) were between 30-39 years which represented the largest proportion of the respondents with ages greater than 39(19.0%) being the least population of respondents. About 90.3% of the respondents were married. In addition, 30% of the respondents had primary education with 4.7% having had tertiary education. Greater proportion of the respondent had resided in the municipality for more than 21 years (60.4%) averaging at 21.0 ± 10.9 . Eighty-one percent of the respondents were traders while 6% also worked as Civil Servants. Also, fifty-four percent of the respondent's partners were traders. On average, pregnant women had conceived 3.9 ± 2.0 times, however, about forty-six percent (46.7%) had between 2-3 pregnancies, while 18% had the least.

Table 4.2: Socio-demographic Characteristics of Respondents

Variable	Frequency N=300	Percentage%
Age		
<29	113	37.7
30-39	130	43.3
>39	57	19.0
Mean (SD)	33.78 (5.5)	

Marital Status		
Single	29	9.7
Married	271	90.3
Level of education		
No education	90	30.0
Primary	113	37.7
JHS	67	22.3
SHS	14	4.7
Tertiary	16	5.3
Years of living in Municipality		
1-10 years	70	23.3
11-20 years	49	16.3
Above 21 years	181	60.4
Mean (SD)	21.0 (10.9)	
Occupation		
Farming	39	13.0
Trading	243	81.0
Civil Servant	18	6.0
Partners occupation		
Farmer	40	13.3
Trader	164	54.7
Miner	36	12.0
Artisan	60	20.0
Parity		
1	18	6.0
2-3	140	46.7
4-5	61	20.3
Above 6	81	27.0
Mean (SD)	3.9 (2.0)	

Source: Author's fieldwork, 2019

4.3 Knowledge of pregnant women about the effects of herbal preparations on themselves and their unborn babies

From findings posted in table 4.2 below, about half of the respondents, 52% indicated their knowledge about awareness of the effects of herbal medicine use during pregnancy whiles 48% said no. Also, 27% of the respondents were of the view that herbal medicine use in pregnancy

increases vitality. Furthermore, 26.3% of the respondents indicated herbal medicine inducing birth whiles 9.0% were not aware of the effects of herbal medicine use in pregnancy on the mother. With regards to the knowledge of the effects on herbal medicine use in pregnancy on the unborn baby, 34.6% of the respondents indicated that they cause deformities and abnormalities. Others, 26.3% said it causes low birth weight, with 5.1% indicating premature labour. With the knowledge about the effects of herbal medicine use on baby after birth, about half of the respondents, 50.0% indicated that, jaundice as an effect on the baby after birth. In addition, quite a number 3.8% of the respondents indicated birth asphyxia.

Table 4.3: Knowledge of pregnant women about the effects of herbal preparations on themselves and their unborn babies

Variable	Frequency (N=300)	Percentage%
Knowledge of the effects of herbal medicine use during pregnancy		
Yes	156	52.0
No	144	48.0
Knowledge of the effects of herbal medicine use in pregnancy on the mother (n=156)		
Increased vitality	42	27.0
Induce birth	41	26.3
Nausea	39	25.0
Sleep disorders	20	12.8
Not aware	14	9.0
Knowledge of the effects of herbal medicine use in pregnancy on the unborn baby (n=156)		
Deformities or abnormalities	54	34.6
Low birth weight	41	26.3
Not aware	28	17.9
Reduced blood and oxygen supply	15	9.6
Intrauterine fetal death	10	6.4
Premature labour	8	5.1

Knowledge of the effects of herbal medicine use on the baby after birth (n=156)		
Jaundice	78	50.0
Poor Physical Growth	29	18.6
Poor Mental Growth	23	14.7
Not aware	20	12.8
Birth Asphyxia	6	3.8

Source: Author's fieldwork, 2019

4.4 Use and Perception of pregnant women on the use of herbal medicine

From findings posted in table 4.3, more than half of the respondents (66.3%) confirmed using herbal preparations in more than one pregnancy and 66.7% of respondents specified that Herbal medicines are cheaper than orthodox medicine. Also, 55.3% of the respondents were of the view that Herbal medicines are not effective than orthodox medicine. Additionally, the use of herbal medicine together with orthodox medicine is harmful, majority of the respondents 70.3% specified it is false, while 29.7% said it is true.

Table 4.4: Use and Perception of pregnant women on the use of herbal medicine

Use of herbal medicine in pregnancy	Frequency(n=300)	Percentage%
In one pregnancy	53	33.67
In more than one pregnancy	103	66.33
Herbal medicines are cheaper than orthodox medicine		
Yes	104	66.7
No	52	33.3
Herbal medicines are effective than orthodox medicine		
Yes	70	44.7
No	86	55.3
Use of herbal medicine together with orthodox medicine is harmful		

True	46	29.7
False	110	70.3

Source: Author's fieldwork, 2019

4.5 Examining the association between Herbal Medicine use, knowledge on HM and other related factors

The study explored the association between Herbal medicine use and the association between the various factors which are believed to have some degree of influence on HM uptake as reported in the literature. Pearson's chi-square test was employed to identify all sociodemographic, knowledge and other variables that were associated with the study outcome.

The socio-demographic variables identified to be statistically significant influencing HM uptake were age [$\chi^2=37.0$, $p=0.001$], level of education [$\chi^2=54.3$, $p=0.001$], occupation of respondent [$\chi^2=23.2$, $p=0.001$], partners' occupation [$\chi^2=35.95$, $p=0.001$], parity [$\chi^2=22.9$, $p=0.001$], number of pregnancies HM was used on [$\chi^2=37.9$, $p=0.001$], motivation for HM use [$\chi^2=52.7$, $p=0.001$] and communicating with others on HM use [$\chi^2=52.7$, $p=0.001$] as presented in Table 4.5

Variables such as marital status, mode of HM administration, information on HM side effects and perceived cost of HM were not statistically associated with HM uptake.(table 4.5)

Table 4.5 Relationship between Herbal Medicine use among pregnant women and other related factors

Variable	Frequency	$\chi^2 - test; [P - value]$
Age (Years)		37.0 ; [0.001] *
<29	113	
30-39	130	
Above 40	57	
		0.17 ; [0.67]
Marital status		
Single	29	
Married	271	

Level of Education		54.3 ; [0.001] *
No education	16	
Basic school	134	
Senior High school	67	
Tertiary	14	
Occupation		23.2 ; [0.001] *
Farming	39	
Trading	243	
Civil Servant	18	
Partners occupation		35.95[0.011] *
Farmer	40	
Trader	164	
Miner	36	
Artisan	60	
Parity		
1	18	22.9 ; [0.001] *
2-3	140	
4-5	61	
Above 6	81	
Number of pregnancies HM was used		37.9 ; [0.001] *
Every past pregnancy	95	
Only one pregnancy	101	
Two or more pregnancies	104	
Motivation for HM use		16.2 ; [0.001] *
Keep fetus strong	57	
To prevent illness	162	
Manage pain and stress	12	
Facilitate easy labour and delivery	69	
Stage of pregnancy		52.7 ; [0.001] *
Soon as pregnant	75	
First trimester	79	
Second trimester	110	
Third trimester	36	
Mode of HM administration		3.4 ; [0.06]
Oral	150	
Intra rectal (Enema)	150	
Consult others on HM usage		17.5 ; [0.001] *
No	72	
Yes	228	
Information on HM side-effects		2.2 ; [0.13]
No	14	
Yes	286	

Cost of HM are cheap		2.2 ; [0.14]
No	100	
Yes	200	

Source: Author's fieldwork, 2019

4.6 Factors influencing herbal medicine use among pregnant women

The study further examined the various variables that influence pregnant women's behaviour to use herbal medicine during pregnancy as presented in table 4.6.1 below. The age of respondent, educational level, partners occupation, number of pregnancies HM was used on during pregnancy, the stage of the pregnancy, consultation with others about HM had significant relationship with HM usage at the Univariate level of the poisson logistic regression.

Women aged less than 29 years and those 30-40 years were 11% [OR = 0.11; 95% CI. = 0.06-0.27] and 88% [OR = 0.88; 95% CI. = 0.03- 0.22] less likely to use herbal medicine compared with those above age 40. Respondents who had up to the basic level education were four times [OR = 4.56; 95% CI. = 2.50-8.30] likely to use HM compared with those with tertiary level education. The likelihood of using HM was increased to by 1.20 times [OR = 1.20; 95% CI. = 0.75-4.18], 1.48 times [OR = 1.48; 95% CI. = 0.90-5.71] and 2.56 times [OR = 2.56; 95% CI. = 2.06- 6.0] for respondents whose partners were traders, farmers, and artisans respectively compared with those whose partners were miners. Respondents who had only one pregnancy were 1.54 times [OR = 1.54; 95% CI. = 0.85-2.77] likely to use HM again compared with those who have had two or more pregnancies. HM uptake was about 8.9 times [OR = 8.92; 95% CI. = 4.25-18.74] likely among respondents when they are in their second trimester compared with those who use it soon as they recognized they are pregnant.

Also respondents who consult others on HM for details were three-fold [OR = 3.23; 95% CI. = 1.83-5.70] likely to use it compared with those who do not.

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Table 4.6.1 Univariate analysis of factors influencing herbal medicine use among pregnant women

Variables	Univariate Model	
	Crude Odd ratio (OR; 95% C.I)	P-value
**Age group		
Above 40 (Ref)	1.00	-
<29	0.11 (0.06-0.27)	<0.001
30-39	0.88 (0.03- 0.22)	<0.001
Marital status		
Single (Ref)	1.00	-
Married	1.17 (0.54 -2.53)	0.67
Educational level		
No education	2.33 (0.61-8.93)	0.21
Basic school	4.56 (2.50-8.30)	0.001
Senior High school	0.33 (0.06-1.61)	0.17
Tertiary (Ref)	1.00	-
Occupation		
Civil Servant (Ref)		
Farming	1.56 (0.71-3.42)	0.26
Trading	0.88 (0.27-.79)	0.83
Partners occupation		
Miner (Ref)	1	-
Trader	1.20 (0.75-4.18)	0.001
Farmer	1.48(0.90-5.71)	0.001
Artisan	2.56 (2.06- 6.0)	0.001
Parity		
1	1	
2-3	0.80(0.46-1.39)	0.23
4-5	1.24 (0.63-2.47)	0.40
Above 6 (Ref)	2.47(1.63-3.74)	0.50
Number of pregnancies HM was used		
Two or more pregnancies (Ref)	1	
Only one pregnancy	1.54 (0.85-2.77)	<0.001
Every past pregnancy	1.25 (0.14-0.46)	0.06
The motivation for HM use		
Facilitate easy labour and delivery	1	
Keep fetus strong	2.19 (0.60-8.02)	0.23
To prevent illness	0.60(0.78-2.06)	0.40
Manage pain and stress	0.61(0.77-2.03)	0.47

Stage of pregnancy		
Soon as pregnant (Ref)	1	
First trimester	7.20 (0.39-13.3)	0.29
Second trimester	8.92 (4.25-18.74)	0.001
Third trimester	1.44 (0.67-3.07)	0.34
Mode of HM administration		
Oral	1	-
Intra rectal (Enema)	1.53 (0.97- 2.42)	0.06
Consult others on HM usage		
No	1	
Yes	3.23 (1.83-5.70)	0.001
Information on HM effects		
No (Ref)	1.00	
Yes	0.63 (0.29-1.53)	0.23
Cost of HM are cheap		
No (Ref)	1	-
Yes	0.69 (0.42-1.12)	0.14

Source: Author's fieldwork, 2019

A final multivariate analysis was performed to identify the true predictors of herbal medicine use among pregnant women in the Obuasi municipality. A stepwise approach was finally employed to control all other covariates. The results indicated that the number of pregnancies which HM was taking for, the stage of the pregnancy, ability to consult other people on HM for details were factors that would influence a woman to use HM during pregnancy.

Respondents who have had a single pregnancy were twice [AOR = 2.14; 95% CI. = 4.83-9.5] likely to use HM compared with those who have had two or more pregnancies and those who take in every past pregnancy [AOR = 2.40; 95% CI. = 2.2-13.73]. Similarly, respondents in their second trimester were nine times [AOR = 9.71; 95% CI. = 1.9-14.73] likely to use HM compared with the referent group. Using HM during pregnancy was 3.13 times likely among respondents who consult other people for more details on HM than those who do not as presented in table 4.6.2

Table 4.6.2 Multivariate analysis of factors influencing herbal medicine use among pregnant women

	Multivariate Model	
Variables	Crude Odd ratio (OR; 95% C.I)	P-value
Number of pregnancies HM was used		
Two or more pregnancies (Ref)	1	
Only one pregnancy	2.14 (4.83-9.5)	0.001
Every past pregnancy	2.40 (2.2-13.73)	0.35
Stage of pregnancy		
Soon as pregnant (Ref)	1	
First trimester	7.16 (0.39-13.3)	0.24
Second trimester	9.71 (1.9-14.73)	0.001
Third trimester	1.10 (0.30-0.38)	0.32
Consult others on HM usage		
No	1	
Yes	3.13 (1.73-5.36)	0.001

**** Variables adjusted for** Frequency of HM consumption,+ Stage of pregnancy,

Consult others on HM usage,

Source: Author's fieldwork, 2019

CHAPTER FIVE

DISCUSSION

5.1 Introduction

The results of the study were under the following sub heading: socio-demographic factors, knowledge on the effects of herbal medicine use in pregnancy, use, and perception of pregnant women on herbal medicine use and the relationship between herbal medicine use among pregnant women and associated factors. The study identified that herbal medicine usage was 52.0% among pregnant women. The frequency at which HM is taking during pregnancy, the stage of the pregnancy, ability to consult other people on HM for details were factors that influenced utilization among pregnant women in the Obuasi municipality.

5.2 Socio demographics of the respondents

The study presents information related to perceptions and the use of herbal medicine among pregnant women in the Obuasi Municipality.

With findings of the study on herbal medicine and socio-demographics, the results show that pregnant women who utilized herbal medicine often had low income, poor standard of living, as well as low levels of education. This contrasts with Rambod et al., (2018) whose study revealed otherwise, but is in line with Leach *et al.*, (2017) although other factors were considered.

Moreover, as is consistent with the finding of this study, 76(25.33%) of the total respondents had only primary education and this limited their awareness as to the adverse impact of herbal medicine use during pregnancy. This conflicts with Hall *et al.*, (2011) whose results showed otherwise where 52% of women in the study who had tertiary education used herbal medicine in pregnancy. A study conducted by Alspac *et al.*, (2011) revealed that women who resided in urban areas were more likely to prefer orthodox medicine to herbs and this counters the result

of this study where over 90% of the women were either farmers or traders who would prefer using herbal preparations than go wait in hospitals and clinics at the detriment of their business. Majority of the women in this study 168 (56%) out of 300 were between the ages of 30-39 and were more likely to have experienced more than one pregnancy and as such, the results would be very much representative of the actual situation and is similar to Alonso-castro *et al.*, (2018) who observed 45.1% .

Findings from this study revealed that married women (90.3%) were more likely to be influenced in their use of herbal medicine and this is in line with (Alonso-castro *et al.*, 2018) who observed 80.3% of the total respondents being married women using herbal medicine in pregnancy than single mothers (19.7%).

5.3 Knowledge on the Effect on Herbal Medicine use on pregnancy

Prior knowledge of the effects of herbal medicine is a key determinant of its use. From this study, 52% of the women indicated they were aware of the effects herbal medicine on pregnancy themselves. Similar results were reported by Laelago *et al.*, (2016) who observed the relationship between prior knowledge and CAM use. Broussard *et al.*, (2010) on the other hand established that the use of herbal preparations was independent of prior knowledge, arguing that most women in the rural arrears attributed the adverse effects to other factors.

Results from this study indicated 52% of respondents were aware of the effects of herbal medicine use in pregnancy and this is similar to Mothupi, (2014) who observed 47.6% of respondents being aware of the effects of CAM use in pregnancy.

With knowledge on the effects of herbal medicine use in pregnancy on the mother, results indicated that 24.7% of respondents revealed nausea being an effect of herbal medicine use on themselves and this relates to Alonso-Castro *et al.*, (2018) who observed 27.9%. In addition, Holden *et al.*, (2015) noted sleep disorders in 27 out of 3,632 respondents while this study indicated 38 out of

300 respondents. Again, inducing birth was identified as an effect of herbal medicine use on the mother (26.3%) of total respondents of 300. This is similar to the findings of a study conducted by Alonso-castro *et al.*, (2018) who observed (31%).

With knowledge on the effect of herbal medicine use in pregnancy on the unborn baby, the results of this study revealed 26% and 34.7% of respondents were aware of low birth weight and fetal abnormalities respectively. This is in consonance with a study by Yusof *et al.*, (2016) and Cleary *et al.*, (2010) who had 75% of respondents confirming underweight and 15.7% fetal abnormalities respectively as effects of herbal medicine use on the unborn baby. 73.8% (93) out of 126 women confirmed premature births as another effect of herbal medicine use as observed by Mabina *et al.*, (1999) while in this study, 5.7% (17) out of 300 respondents confirmed likewise.

Meanwhile, information on herbs preparations is becoming easily available with the use of various advertisements and media outlets such as TV and radio. Generally, however, the use of complementary and alternative medicine has increased worldwide, as is confirmed by Awodele *et al.*, (2012) and this may be attributed to the increase in knowledge concerning such medications.

5.4 perception on the effect of herbal medicine on pregnancy

Pregnant women have positive insights and approach towards herbal medicine due to their beliefs which are similar to traditional healing practices.

According to the findings of the study, pregnant women using herbal medicines in pregnancy had the perception that, orthodox medicine is effective in dealing with most pregnancy-related conditions and this is in contrast to what was proposed by Frawley *et al.*, (2015) indicating herbal medicine being more effective for pregnancy-related disorders such as back pain, fever, malaria, nausea and vomiting. Secondly, respondents argued that, herbal medicine was

considered cheaper which confirmed the results of a study by Van Andel *et al.*, (2015b). Although majority of the respondents (211) in this study saw no harmful effect in combining orthodox and herbal medicine, McLay *et al.*, (2017) proposed otherwise and therefore emphasized the need to educate pregnant women on possible drug-drug interaction.

5.5 Examining the association between Herbal Medicine use, knowledge on HM and other related factors

The Chi-square tests identified socio-demographic characteristics such as age, level of education, occupation of respondents' partner, parity and other factors such as the number of pregnancies HM was used on, motivation for this use and ability to communicate with others for details on HM use were identified as significant factors that correlate with HM utilization.

Personal characteristics such as the education level of an individual are known to shape their way of thinking and analysis of situation. The rate at which pregnant women are expected to scrutinize what type medication they consume may be shaped by this variable. For instance Ahmed *et al.*, (2018) noted that educational level plays an important role in herbal medicine utilization especially during pregnancy, and for that matter classified education as one of the independent variables that must be looked at. The number of pregnancies a woman may have experience in a lifetime influences their world view about health and potentially alters their behaviour towards health-seeking. It has been reported that a woman's experience during delivery and at birth influences the type of health care approach to adopt and by extension the same can be said about the type of medical care they may opt for. Therefore, it is not surprising to identify parity and age as significant variables to study. This has been reported in a number of studies (Onah *et al.*, 2006; Sejfeskog *et al.*, 2006). An individual's taste and preference are known to be a function of income, while income level, on the other hand, is greatly influenced by the type of work engagement one is involved in. This means that individuals with certain

degree of income may have preference for some particular item against the other. It is therefore not surprising that occupation of respondents' partners had an association with their preference and utilization for HM.

The choice of care is usually motivated by a couple of reasons, the study identified motivation as one of the factors that may be associated with HM utilization. Our study identified motivation as a determinant of HM utilization, this confirms findings from other researches. For instance Mureyi *et al.*, (2012) reported that there are various factors which act as motivator for a woman's choice of health care, thus choosing HM is motivated by belief in superstition, assurance of having safer delivery outcome among others. Finally, the respondent's ability to discuss with others in detail about herbal medication was identified as a significant variable. It is obvious that once a person is able to consult others on the HM medication, there may be a lot of questions and issues that will come up and possibly addressed (Ghazali *et al.*, 2019). This could possibly explain why respondents consulting others on HM has some form of association with utilization.

5.6 Factors influencing herbal medicine use among pregnant women

The findings from the univariate analysis in the study revealed that age of respondent, educational level, partners occupation, number of pregnancies HM was used on during pregnancy, the stage of the pregnancy, consultation with others about HM had an association with HM utilization.

The age of respondent had a positive relationship with the possibility of HM utilization such that, as a respondent ages, their odds of HM usage also increases and decreases when the age declines. This indicates that older respondents had a particular preference for HM over conventional medications, however the exact factor behind this rationale was not explored as it falls outside the study focus. Similarly, educational level also proved a positive relationship with HM utilization. It was revealed that the chances of people with lower education opting for

HM were higher compared with those at higher levels. This finding corroborates with other studies which reported by Rambod *et al.*, (2018) and Al *et al.*, (2018) in that education plays a significant role in motivating people to use HM. The possible explanation could be the fact that educated respondents were exposed to the potential dangers of HM on foetus and the baby and for that matter it has affected their preference. Another important sociodemographic factor that was identified is occupational status of the respondent's partners. Workers such as artisans had a higher possibility of adopting HM, compared to farmers and traders even though their various odds indicate significant association. These changes in odds among these professions may be influence by several factors such as believed in the potency of HM, affordability, lack of trust in conventional medicine among others. This finding corroborates with another study by Leach *et al.*, (2017).

The number of pregnancies a woman had experience was identified to have a significant influence on their experiences as far as childbearing is concerned. Our study revealed that odds of a respondent using HM during pregnancy were 1.5 times higher compared to those who have had only pregnancy compared to those with multigravida. The possible explanation could be the fact the first pregnancies usually comes with certain form of anxiety. Obuasi is a typical traditional town and for that matter the behaviour of inhabitants is mostly by culture and other superstitions. The women may undergo several physical transformations for the first time and for that matter may look for ways to manage these changes, which herbal remedies may be included. It is reported that fear of evil among others were some of the reasons why most pregnant women in Africa rely on herbal medication (Mureyi *et al.*, 2012). The study finally revealed that respondents who consult others for details on HM were three times likely to use them compared to those who do not. It is believed that making inquiry about a particular product means that one may take time to analyse the uses, its applicability, and its benefits. Therefore, ones a party is set to use such products they may feel that they have adequate

information on such a product. The same can be said of respondents who talk to others about HM, it is likely these people are able to alleviate all their doubts about HM, that why they use.

After adjusting for the effects of covariates, a variable such as the number of pregnancies which HM was taking for, the stage of the pregnancy, ability to consult other people on HM for details was identified as true predictors of HM utilization among the pregnant women.

The study revealed that a number of pregnancies to a woman has an association with HM usage. For instance, those with who had experienced single pregnancies were twice likely to use HM compared to those with multiple. This finding affirms report from a study in Zimbabwe that prenatal use of traditional medicine associated with nulliparity and nulligravidity compared with those multiparity and gravida (Mureyi *et al.*, 2012). Women without much pregnancy experience may seek advice from others concerning their pregnancies and end up choosing some of these traditional methods recommended by their colleagues. Most women regard certain postpartum conditions as abnormal events and for that matter may wish to guard against it. For instance reported that fear of perineal tear during delivery is one of the factors that most influence women's use of herbal preparation in managing their postpartum complications (Lindgren *et al.*, 2011).

The stage of pregnancy is also another important factor that influences the use of HM among women. The likelihood of a woman using HM was nine times higher when the pregnancy is in second trimester compared to first and third trimesters. This finding contradicts a report from Mureyi, Monera and Maponga, (2012), who stated in their study that a woman in Zimbabwe uses HM at least once by the time they reach their third trimester in each pregnancy. The variation in the findings may be attributed to issues like cultural diversity between the two countries.

Finally, the study revealed that all the pregnant women who reported to have consulted others for details about HM were at higher chance of using it compared to those who did not. This

finding is consistent with other studies conducted elsewhere in Ghana which reported that most pregnant women especially the first-timers usually consult other family relations like grandparents, friends, mothers, and in-laws for herbal preparation appropriate for the upkeep of the unborn baby (Addo, 2008). Therefore, it is not out of place to see consultation from others as a factor that influences HM utilization.

5.6 LIMITATION OF THE STUDY

The study faced some problems especially in gathering information from women directly involved in the use of Herbal preparation during pregnancy. Some respondents who are victims of these practices failed to admit the usage of herbal medicine limiting the responses.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

This research explored knowledge, perceptions, and use of herbal medicine among pregnant women in the Obuasi Municipality. There is a positive perception, attitude, and knowledge towards the use of herbal medicine among pregnant women. However, pregnant women living in remote areas primarily perceived herbal medicine as effective, efficient and safe method of treating the pregnancy-related condition as compared to orthodox medicine.

Basically, herbal medicines are accessibility and cost-effectiveness in rural areas as compared to orthodox drugs.

The results from this study highlighted that, there was a significant association between herbal medicine use in pregnancy and various socio-graphic characteristics such as age, level of education, occupation and marital status.

6.2 RECOMMENDATION

The recommendations of the study are presented based on the findings from the research objectives.

6.2.1 MINISTRY OF HEALTH

1. Future research should concentrate on the safety and effectiveness of Herbal Medicine use in pregnancy.
2. Findings from this study revealed that pregnant resorted to herbal medicine use because it was cheaper than orthodox medicine. It is prudent for the ministry to subsidize the prices of orthodox medicines making it accessible and affordable for public consumption.
4. Certified and approved herbal medicines by the Food and Drugs Authority (FDA) should be included in the National drug list for use by pregnant women.
5. There is a need for the Ministry of Health and other health institutions to educate the public on the effects of herbal medicine use in pregnancy since most pregnant women do not disclose the use of herbal medicine in pregnancy to their health care providers.

6.2.2 HEALTHCARE PROVIDERS

1. The utilization of Herbal Medicine before pregnancy is connected with its use during pregnancy. In view of this, general Health practitioners should educate women and their partners during preconception care.
2. Health practitioners should be knowledgeable about Certified and approved herbal medicines so that they can recommend their use for pregnant women who opt for them.

3. Health practitioners should create a cordial relationship with pregnant women in order to provide quality healthcare advice and services to clients, through trust-building and confidence. This will help pregnant women to disclose their intentions of herbal medicines use to them.
4. Healthcare providers should conduct regular follow-ups on pregnant women to monitor their medication, antenatal clinic attendance, and general health during pregnancy.

6.2.3 COMMUNITY

1. Sensitization of the community on the effects of herbal medicines on pregnant women and their unborn babies.
2. Promotion of Community participation between the Health providers and pregnant women

6.2.4 INDIVIDUAL

1. Pregnant women should seek counselling from healthcare providers or discuss their intentions with healthcare providers on the use of Herbal Medicine during pregnancy.

6.2.5 FURTHER RESEARCH

The study suggests that future research should consider the safety and patterns of the utilization of herbal medicines by women during pregnancy, labour and after delivery.

The study warrants that, further research should be conducted on the high occurrence of Herbal Medicine municipality in order to generalize the findings.

Again, the study suggests that future research should be conducted on public education and awareness on disclosure of herbal medicine utilization among pregnant women.

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The logo of KNUST (Kwame Nnamdi University, Nsukka) is a large, faint watermark in the background. It features a central shield with a yellow eagle with spread wings, a green star, and a red and white torch above it. The shield is flanked by two yellow banners with the text 'NYAN' and 'ENMA'. Below the shield is a yellow banner with the text 'SANE NO'.

APPENDICES

APPENDIX I: PARTICIPANT CONSENT FORM

CONSENT FORM

You are being invited to participate in research titled: **THE USE OF HERBAL MEDICINE BY PREGNANT WOMEN IN THE OBUASI MUNICIPALITY** This study is done by **HANNAH PENORKIE** from **KNUST**.

The purpose of this study is to help improve our service delivery in Healthcare and will take you approximately 10 minutes to complete. Your participation in this study is voluntary.

I hereby declare, having understood the overview of the study and knowing the benefit as well as dis-benefit of the study, duly subject myself to the full participation of this research. Furthermore, note that I can withdraw from this research at any time if I find out my continuous participation might be a detriment to my religious, professional, emotional and ethical stands, consent to partake in this study.

KNUST

.....
(Participant)

.....
(Researcher)

.....
(DATE)

.....
(DATE)

APPENDIX II: QUESTIONNAIRE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF PUBLIC HEALTH

MPH HEALTH SERVICES PLANNING AND MANAGEMENT

A Study to Assess the use of Herbal Medicines by Pregnant Women in the Obuasi Municipality

QUESTIONNAIRE

This questionnaire aims to investigate the use of herbal medicines among pregnant women and its effects on the health of the woman and her unborn baby. The questionnaire is meant to collect data for academic purposes only. All responses shall be treated strictly confidential and

no information will be divulged to any third party. Your response to this questionnaire would be highly appreciated.

PART A: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

1. Age of respondent

2. Level of education

☐

3. Primary
to school

JHS ☐

☐

Secondary/Technical

☐

Tertiary

☐

Have not been

3. Years of living in the Municipality

4. Marital status

☐

a. Single

☐

Married

☐

Divorced

☐

Widow

5. Educational level of partner

☐

Primary

☐

Secondary/Technical

☐

Tertiary

☐

Have not been to school

6. Occupation of respondent

7. What is the occupation of your partner?

PART B: INFORMATION ABOUT HERBAL MEDICINE USE. Please circle all that is applicable

8. How many times have you been pregnant? _____

9. Did you ever use herbal medicine or preparations in any of your pregnancies? Please tick

Yes No ☐

10. How often did you use herbal medicine or preparations in your previous pregnancies?

Please ignore if you answered **NO** to question 9.

☐ In one pregnancy ☐ in more than one pregnancy

11. Why did you use herbal medicine or preparations in pregnancy?

☐ To keep my baby strong and active ☐ To prevent illness ☐ To manage pain and stress

☐ To make my labour and delivery easy ☐ To induce labour

☐ Others (please specify)

.....
.....

12. What type of herbal medicines preparations do you take?

Self / Homemade ☐ Bought ☐

13. Where do you buy or get the herbal medicines or preparations from? From farms or within

☐ my vicinity Herbal shops/ Pharmacy ☐

☐ Roadside ☐ Hawkers

14. At what stage of the pregnancy do you start using herbal medicines or preparations?
please tick appropriately

() as soon as I know I am pregnant () from 1 - 3 months of pregnancy

() from 4 -7 months of pregnancy () from 7 months of pregnancy till labour

15. In what form is the herbal medicine you are using and how much do you take each day?
- Liquid () 1-3 tablespoons daily () 4-6 tablespoons daily () more than 6 tablespoons daily ()
 - Powder () 1 tablespoon daily () 2-4 tablespoons daily () more than 4 Tablespoons daily ()
 - Tablet / Capsules () 1 tab/caps daily () 2-4 tabs/caps daily () more than 4 tabs/caps daily
 - In the form of enema () once a week till delivery () 1 - 2 times every month till delivery () every alternate month till delivery
 - Others please specify.....

16. Are you taking any herbal medicine for any other condition apart from pregnancy related effects? YES () NO ()

If the answer in question 16 is **NO**, ignore question 17.

17. What condition are you taking it for? Please specify
.....

With regard to the Personal Overview of herbal preparation practices below (PART C to D), ***please circle the number*** that accurately reflects your personal conditions.

PART C: RESPONDENT'S KNOWLEDGE ON THE EFFECTS OF HERBAL MEDICINE USE. PLEASE TICK APPROPRIATELY

18. I am aware of the effects of herbal medicine use during pregnancy. YES / NO

19. What are some of the effects of herbal medicine use in pregnancy on the mother?

[] Induced birth [] Sleep disorders [] Nausea [] Increased vitality

Others please specify

.....
.....

20. What are some of the effects of herbal medicine use on the baby whilst in your womb?

- [] Deformities / abnormalities [] low birth weight [] poor intrauterine growth
 [] reduced blood and oxygen supply [] intrauterine fetal death
 [] premature labour

Others please specify

.....

21. What are some of the effects of herbal medicine use on the baby after birth?

- [] birth asphyxia [] Jaundice [] poor mental growth [] poor physical growth

Others please specify

.....

22. Did you talk to anyone about herbal medicines before you started taking?

☐

1. YES

☐

NO

23. Who prescribed the herbal medicine for you?

☐

Medical doctor

☐

Traditional doctor friends/relatives

☐

Others please specify

24. I exchange information on herbal medicine use with my doctor and or midwife YES
 / NO

25. The health attendants keep me fully informed about the effects of herbal medicine on
 myself and my unborn baby and general health. YES / NO

26. Information exchange between me and my health attendants is timely

YES / NO

27. I only share accurate information about my general health with my doctor

YES / NO

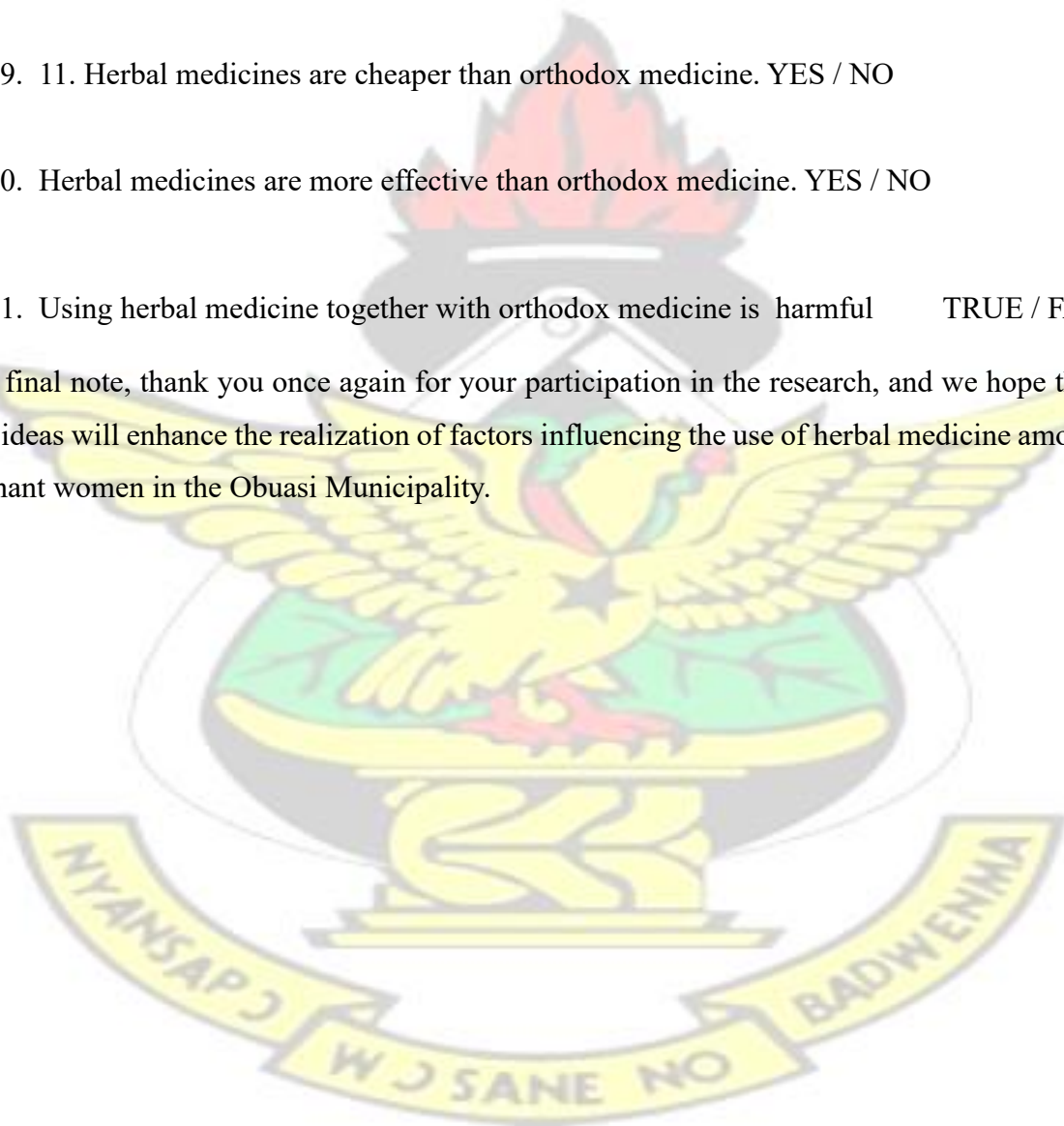
28. **PART D: PERCEPTIONS OF PREGNANT WOMEN WHO USE HERBAL PREPARATIONS DURING PREGNANCY.** Please circle appropriately Herbal medicines help boost my health YES / NO

29. 11. Herbal medicines are cheaper than orthodox medicine. YES / NO

30. Herbal medicines are more effective than orthodox medicine. YES / NO

31. Using herbal medicine together with orthodox medicine is harmful TRUE / FALSE

On a final note, thank you once again for your participation in the research, and we hope that your ideas will enhance the realization of factors influencing the use of herbal medicine among pregnant women in the Obuasi Municipality.





KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES



SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

Our Ref: CHRPE/AP/362/19

30th May, 2019.

Miss Hannah Penorkie
Department of Health Policy,
Management and Economics
School of Public Health
KNUST-KUMASI.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: *"The Use of Herbal Medicine Among Pregnant Women in the Obuasi Municipality."*

Proposed Site: *Obuasi Government Hospital and AGA Health Foundation, Obuasi.*

Sponsor: *Principal Investigator.*

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A notification letter of 16th May, 2019 from the Obuasi Government Hospital (study site) indicating approval for the conduct of the study at the Hospital.
- A notification letter of 15th May, 2019 from the AGA Health Foundation (study site) indicating approval for the conduct of the study at the Health Facility.
- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 30th May, 2019 to 29th May, 2020 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you, Sir, for your application.

Yours faithfully,

Osomfo Prof. Sir J. W. Acheampong MD, FWACP
Chairman

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