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UNIVERSITY OF GHANA

DIETARY PRACTICES AMONG PREGNANT WOMEN: A CROSS-SECTIONAL STUDY CONDUCTED AT THE UNIVERSITY OF GHANA HOSPITAL, LEGON AND THE MADINA POLYCLINIC.

BY

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JULY, 2019
DECLARATION

I, Leonie Afi Allorsey, hereby declare that this submission is my own work and that to the best of my knowledge, it contains no material previously published or written by another person nor material, which has been accepted for award of any degree or diploma of any university or other institutions of learning except where due acknowledgement is made in the text.

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DEDICATION

This research work is dedicated to the Almighty God, my late dad, Mr. Gilbert Kwaku Alorsey, my mother, Ms. Mercy Abeashie and all my siblings for their love, care, directions and moral support throughout my master’s program.
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My sincere gratitude also goes to the Administrator and Midwives at the antenatal section at the Madina Polyclinic and the University of Ghana Hospital for all the assistance and hospitality during the data collection process.

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ABSTRACT
Dietary practices among pregnant women from preconception through to lactation can influence growth, development and long-term health of the child as well as the health of the mother. It is expedient that pregnant women practice good nutrition to prevent the mother and child from experiencing negative health outcomes. This study sought to investigate the dietary practices among pregnant women, identifying pregnant women’s knowledge about dietary practices, their attitudes towards dietary practices and the socio-cultural beliefs that influence their dietary practices.

This was a cross-sectional quantitative study. A structured questionnaire was administered to the pregnant women attending Antenatal Clinic at the University of Ghana Hospital and the Madina Polyclinic and the data gathered was analysed using SPSS Version 22. A systematic random sampling technique was employed to identify pregnant women who sought antenatal care from the University of Ghana Hospital and the Madina Polyclinic. The association between socio-cultural beliefs and dietary practices was determined using Correlation and the demographic characteristics with dietary practices were analysed using Logistics Regression and Chi-Square Statistics.

A total of 350 pregnant women were involved in this study. The results of the study revealed that most of the pregnant women (91.7%) had high knowledge of dietary practices and 85.1% of them had a positive attitude towards dietary practices. The results also revealed that 57.1% of the pregnant women engaged in good dietary practices. An association of socio-cultural beliefs and dietary practices showed that there is a strong negative correlation between socio-cultural beliefs and dietary practices \( r(350) = -0.116, p < 0.05 \). An association between demographic characteristics and dietary practices revealed that educational level \((p=0.01)\), religious affiliation \((p=0.004)\), employment status \((0.002)\) and trimester \((0.001)\), were significantly associated with knowledge of dietary practices. Also, an association between
dietary practices and demographic characteristics revealed that, pregnant women who were employed OR= 2.042 (p<0.05) were more likely to engage in good dietary practices than unemployed pregnant women and pregnant women who were in their second and third trimester OR= 2.097 and 2.634 (p<0.05) respectively, were more likely to engage in good dietary practices than those in their first trimester.

There are several factors that influence the dietary practices of pregnant women. The study focuses attention on the need for intensive education especially on the various food groups and essential nutrients needed for the growth and development of the pregnant woman and the foetus.
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<td>AMA</td>
<td>Accra Metropolitan Assembly</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>DRI</td>
<td>Dietary Reference Intake</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation</td>
</tr>
<tr>
<td>GDA</td>
<td>Ghana Dietetic Association</td>
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<tr>
<td>GDM</td>
<td>Gestational Diabetes Mellitus</td>
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<tr>
<td>GIMPA</td>
<td>Ghana Institute of Management and Public Administration</td>
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<td>GSS</td>
<td>Ghana Statistical Services</td>
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<tr>
<td>HPM</td>
<td>Health Promotion Model</td>
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<tr>
<td>MDDW</td>
<td>Minimum Dietary Diversity for Women</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mid Upper Arm Circumference</td>
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<tr>
<td>PIH</td>
<td>Pregnancy Induced Hypertension</td>
</tr>
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<td>PRESEC</td>
<td>Presbyterian Boys’ Senior High School</td>
</tr>
<tr>
<td>SDG</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UPS</td>
<td>University of Professional Studies</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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<td>WHO</td>
<td>World Health Organization</td>
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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

The nutritional status of pregnant women during and after pregnancy contributes a great deal to their own wellbeing and that of their children and other household members. Nutrition at an early stage, from preconception through to lactation, can greatly affect the growth, development, long-term health and wellbeing of women (Malek, 2015). A healthy diet is very essential during the pregnancy stage. Poor dietary practices places women at a higher risk of unhealthy gestational weight gain which can negatively impact mothers’ and babies’ health, leading to a range of poor maternal and infant outcomes (Yeatman & Williamson, 2016). Pregnancy happens to be the stage in the woman’s life in which her nutritional demands are very high.

According to the Ghana Statistical Service, (2016), Ghana’s maternal mortality reduced from 760 to 380 maternal deaths per 100,000 live births. As of 2017, the maternal mortality ratio for Ghana was 319 maternal deaths per 100,000 live births (WHO, 2018). This invariably means that maternal mortality is still a challenge despite the national efforts to curb it.

Essential nutrients and sufficient weight gain are very important for pregnant women, the two main modifiable risk factors influence maternal and infant outcomes (Nana & Zema, 2018). During the non-pregnancy state, the energy requirements and specific micronutrient requirement are not as much as that of a pregnant woman. Though pregnant women require more energy and nutrients, they cited food unavailability, increase in food prices, gender-related issues of household food purchasing, and maternal illnesses as barriers to consuming nutritive foods during pregnancy (Kavle & Landry, 2018). During the first trimester of pregnancy, which is from week one to week twenty-eight, the development of the foetus solely
depends on the pregnant woman’s dietary practices and healthy living (Monchari, et al., 2017). However, it is very rare that pregnant women alter their diet to suit their pregnancy.

Dietary practice is defined as observable actions or behaviour of dietary habit and can be classified as having good dietary practices and poor dietary practices (Nana & Zema, 2018). Some dietary practices among pregnant women are; food cravings thus, the strong appetite for certain foods. Pica practice such as the eating of bentonite clay and drinking some herbal concoctions are also other dietary practices that pregnant women indulge in. Some pregnant women also experience strange loss of appetite for certain foods and feel nauseated at the smell of such foods whereas other pregnant women are able to eat healthy during pregnancy. According to Sonko, (2016), even though nutrient needs of pregnant women increases by 20 – 30% compared to their non-pregnancy counterparts, there are reports of some evidence which suggest that pregnant mothers tend to engage in some nefarious dietary practices with the hope that they deliver small babies to prevent complications.

The personal values and socio-cultural beliefs concerning dietary practices in pregnancy, advice from nutrition officers and other health professionals, and the physiological changes may interfere with the factors that influence attitudes of pregnant women towards their dietary practices (e.g., personal preferences, time, money) to change diet-related behaviours (Forbes & Graham, 2018). A better understanding of maternal diets and their domains of influence in this setting could inform strategies to promote consumption of nutritive foods by pregnant women vulnerable to malnutrition and pregnancy complication as a poor dietary choice has the most damaging effect on the pregnant woman (Rosen et al., 2018).

Nutrition in pregnancy may further be hampered because certain groups of pregnant women believe that if they engage in good dietary practices, their infants will be too big and may experience obstructed labour or caesarean operation (Masuku & Lan, 2014).
1.2 PROBLEM STATEMENT

Normally, the health statuses of a pregnant woman are related to the wellbeing of the infant she produces and her ability to breastfeed and raise the children. The nutritional statuses of pregnant women play a very significant role in the wellbeing of both the pregnant woman and the offspring (Kolosova & Miskova, 2017).

According to UNICEF, (2010), each year, more than half a million women die from causes related to pregnancy and childbirth. Out of the over 200 million women who become pregnant each year, most of them in developing countries, suffer from on-going nutritional deficiencies, repeated infections and the long term cumulative consequences of undernutrition during their own childhood (Fekadu Beyene, 2013). A study conducted in the United Kingdom (UK) indicate that only a small percentage of women who had been planning to become pregnant actually followed the nutritional recommendations during pregnancy (Krzepota, et al., 2014). This reveals the importance of dietary practices among pregnant women.

In the capital of Ghana, Accra, 68% of pregnant women are known to select the foods they eat based on the cultural beliefs (Boatemaa et al., 2018). A study conducted by Boatemaa et al., (2018), also revealed that 72% of the pregnant women chose the kinds of foods they ate based on food beliefs and what they heard from influential people like their grandmothers. In Northern Ghana, 68.3% of pregnant women had poor dietary knowledge and 31.7% had good dietary knowledge (Abubakari & Jahn, 2016). The poor dietary knowledge of pregnant women affected the health of the pregnant women and the babies leading to conditions such as anaemia in pregnancy and malnutrition in the babies (Abubakari, & Jahn, 2016).

However, the dietary practices of pregnant women have not fully been explored, looking into details what influences the choice of food that these pregnant women go for. In Ghana, pregnant women are influenced by their socio-cultural beliefs, family size, family income and
educational level in relation to their dietary practices (Koryo-Dabrah et al., 2012; Arzoaquoi et al., 2015 & Abubakari & Jahn, 2016). These influences on their dietary practices have contributed to the high rate of anaemia in pregnancy, other dietary-related conditions and maternal mortality in Ghana (Koryo-Dabrah et al., 2012).

The study, therefore, seeks to look at the dietary practices among pregnant women and what influences or informs the food choices they make during pregnancy. This study seeks to give a better understanding of dietary practices among pregnant women to help achieve the Sustainable Development Goal (SDG) three (3), good health and wellbeing.

1.3 RESEARCH QUESTIONS

1. What knowledge do pregnant women have about dietary practices during pregnancy?
2. What dietary practices do pregnant women indulge in during this stage?
3. What is the association between socio-cultural beliefs and dietary practices among pregnant women?

1.4 OBJECTIVES OF THE STUDY

1.4.1 GENERAL OBJECTIVE;
To determine the factors that influence the dietary practices among pregnant women attending Antenatal clinic at the University of Ghana Hospital and the Madina Polyclinic.

1.4.2 SPECIFIC OBJECTIVES

1. To identify pregnant women’s knowledge of dietary practices.
2. To assess the dietary practices of pregnant women.
3. To determine the association between socio-cultural beliefs and dietary practices among the pregnant women.
1.5 SIGNIFICANCE OF THE STUDY

The problem encountered in this study is the potential inadequate nutritional status among pregnant women during their nine months stage of the pregnancy. When a woman is poorly nourished and pregnant, she and her foetus will suffer from the lack of nutrients. This study, therefore, has important implications of nutrition education.

First of all, it will increase the understanding of factors affecting the eating habits of pregnant women. It will also be valuable for planning nutrition education programmes for pregnant women. Moreover, the information on dietary practices will assist nutrition officers and dieticians in the planning of healthy meals for pregnant women to meet the estimated adjusted requirements. The knowledge of dietary practices among pregnant women will also indicate the possible need for, as well as the level of nutritional support necessary for the pregnant women.

Furthermore, pregnant women who have weird dietary practices due to some socio-cultural beliefs binding them may have poor pregnancy outcomes. The correction of some of these socio-cultural beliefs presents a challenge to all nutrition educators, midwives and dieticians. This study will provide the necessary information, which will help in this regard. Finally, results from this study will fill the gap in the void of information on dietary practices among pregnant women.

1.6 DEFINITION OF TERMS

**Dietary Practices:** They are the observable actions or behaviour of eating habits and can be classified as good dietary practices and poor dietary practices.

**Pregnant Women:** They are women carrying one or more developing offspring in their womb.
**The University of Ghana Hospital:** It is a health facility which belongs to the University of Ghana and is located in Legon, a suburb of Accra. It provides quality health care and health services to the students and staff of the University and the general public.

**Madina Polyclinic:** It is a health facility managed by the Ghana Health Services to provide quality healthcare and health services to the people of Madina and her neighbouring communities.

1.7 CONCEPTUAL FRAMEWORK

The conceptual framework for this study was adopted and modified from the Social Ecological Model developed by Urie Bronfenbrenner (Raingruber, B., 2010). The Social Ecological Model also known as the Ecological Systems Theory is used to determine how an individual’s behaviour is influenced by the person and the environment.

There are several factors that influence dietary practices among pregnant women. Such factors are; the biological, psychological, social/cultural and environmental factors. The biological factors that influence a pregnant woman’s dietary practices are age, educational level, socio-economic status and others. The psychological factors are beliefs, preferences, food cravings, knowledge and attitude. Social/Cultural factors such as social support, socio-cultural beliefs and social norms also influences the pregnant woman’s dietary practices. Environmental factors such as food availability and accessibility also affect the pregnant woman’s dietary practices.
Figure 1.1 Conceptual framework of dietary practices among pregnant women
SOURCE: Social Ecological Model by Urie Bronfenbrenner

- Biological & Demographic
  - Age, marital status, educational level, socio-economic status

- Psychological
  - Beliefs, Preferences, food cravings, knowledge, attitude

- Social/Cultural
  - Social support, socio-cultural beliefs, social norms

- Physical Environment
  - Food availability and accessibility

Dietary Practices
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review of the study seeks to summarise literature in relation to dietary practices among pregnant women. This chapter gives a literature review on areas such as dietary practices, nutritional status of pregnant women, nutritional guidelines for pregnant women, socio-demographics and its effects on dietary practices, socio-cultural beliefs and its effects on dietary practices among pregnant women.

2.2 Dietary Practices

Dietary practices according to Nana & Zema, (2018), are observable actions or behaviour of eating habits and can be classified as having good dietary practices and poor dietary practices. Good dietary practices refer to eating habits that are healthy or the process of eating foods that contain all the nutrients in their right proportion to enhance growth and development (Aliwo et al., 2019). Poor dietary practices can also be defined as a behaviour of eating foods that do not contain all the nutrients needed for growth and development or eating foods that are not healthy (Aliwo et al., 2019).

During pregnancy, there is a higher rate of inadequacies of dietary practices due to the eating habits and dietary patterns of pregnant women (Ghosh-Jerath et al., 2015). It was discovered that pregnant women in developing countries limit their food intake whiles pregnant for varied reasons (Abubakari & Jahn, 2016). Such reasons include having smaller babies since the smaller babies are more likely to have lower delivery complications, their socio-cultural beliefs and the perceived severity of delivery complications by having to put to birth bigger babies (Monchari et al., 2017). Hence, there is a low intake of foods from the various food groups especially foods from the food group of vegetables, fruits, nuts and seeds. The inability to take
in enough food from these food groups pose the threat of lack of certain essential nutrients in the body for growth and development (Marangoni et al., 2016). The low intake of these essential nutrients due to poor dietary practices could include other factors such as environmental factors, socio-economic factors, and lack of social support (Marangoni et al., 2016; Monchari et al, 2017). A lack of these essential nutrients is also known to be a contributing factor to conditions such as gestational diabetes, anaemia in pregnancy, low birth weight, intrauterine growth retardation and adversely maternal mortality (Sanchez et al., 2011). Dietary practices that emanate from a person’s community or society can also affect the intake of food during the life stages of the individual. This kind of dietary practice can be put in categories based on the social functions of the community rather than the nutritional status of the individual and this can affect the type of food an individual consumes at every stage (Lennox et al., 2017). Most pregnant women that ate food based on the dietary practices of their community had poor pregnancy outcomes such as miscarriage, complications during delivery and generally, a poor health (Chen et al., 2016).

According to Rosen et al., (2018), these classifications of foods based on socio-cultural beliefs or social functions have greatly affected maternal dietary practices. Other studies have also stipulated the fact that consumption of food by pregnant women especially in the developing countries had some restrictions based on their beliefs and norms of their community or society (Rosen et al., 2018; Malek, 2015; Lennox et al., 2017). Similarly, a study conducted in Nigeria also stipulated that food consumption during pregnancy was influenced by food taboos or food restrictions by the culture of the people (Ugwa, 2016). However, more work needs to be done on exploring the multi causality of poor dietary practices to reduce the rate of maternal mortality in the country (Arzoaquoi et al., 2015).
2.3 Nutritional Status of Pregnant Women

The nutritional status of a pregnant woman helps in determining the pregnancy outcome with important implications on the health of the foetus as well (Yeatman & Williamson, 2016). Maternal nutrition plays a fundamental role in making the most effective use of the pregnancy outcome and not like other factors, such as already existing conditions, the nutritional status of the pregnant woman can change (Forbes & Graham, 2018). According to Fekadu Beyene, (2013), it is advisable for a pregnant woman to eat well during pregnancy and not just increase the quantity of food she takes. When eating, the pregnant woman must bear in mind that, what she eats provides good nutrition for herself and the foetus and its survival (Ghosh-Jerath et al., 2015). Failure to supply the exact amount of nutrients needed for the growth and development of the foetus can lead to malnutrition (Fekadu Beyene, 2013).

The reproductive health and performance of a woman also affect her nutritional status during pregnancy (Sonko, 2016). Other studies have also indicated that the nutritional status of pregnant women, especially in the developing countries, is affected due to the fact that they consume foods that give them less than the required nutrient intake for the day (Sonko, 2016; Fekadu, 2013; Ghosh-Jerath et al., 2015). These required nutrients are the macronutrients (Carbohydrates, Proteins and Fats) and the micronutrients (minerals and vitamins). Also, the average weight for height for pregnant women usually falls above the normal weight for women in their reproductive ages (Symington et al., 2018). Furthermore, the energy and nutrient intake for pregnant woman is slightly higher than that of women in their reproductive ages or non-pregnant women (Kolosova & Miskova, 2017). In a study conducted by Krzepota & Putek-Szelag, (2014), pregnant women with poor nutritional status can be attributed to women with closely spaced pregnancies and this can lead to nutritional depletion, known as the maternal depletion syndrome.
In assessing the nutritional status of pregnant women, the most frequent method applied is anthropometry (Masuku & Lan, 2014). According to Ghosh-Jerath et al., (2015), anthropometry is the measurement of the body of an individual. It involves measuring, the weight, height, waist circumference and hip circumference of the individual. Anthropometry is also recognised as an effective tool which aids in the prevention of obesity, the projection of child health and the promotion of women’s health over the past three decades (Forbes & Graham, 2018). In order to detect excessive weight gain during pregnancy, the anthropometric measure is used to calculate the Body Mass Index (BMI) and later used to give a good nutrition recommendation to the pregnant woman (Kavle & Landry, 2018).

Tackling the nutritional status of pregnant women, pregnant women have nutritional needs. According to Zelalem et al., (2018), nutrition is the food intake in relation to the dietary needs of the body. This can be classified into good nutrition and poor nutrition. Good nutrition is the individual’s ability to take in foods that contain all the six food nutrients in their right proportion with good portion control (Zelalem et al., 2018). Poor nutrition, on the other hand, can be related to the inability of the individual to eat a healthy meal which can lead to lack of immunity and stunted growth (Zelalem et al., 2018). Hence, the importance of women in their reproductive ages to maintain a good and healthy nutritional status throughout this phase of their lives to avoid complications. In maintaining a good nutritional status, pregnant women should consider regular appropriate exercise, consumption of foods in all the food groups in accordance to their dietary recommendations and the avoidance of foods or substances like alcohol that could harm their health (Forbes & Graham, 2018).

2.3.1 Nutritional Guidelines for Pregnant Women

In order to address the nutritional needs of pregnant women, dietary recommendations for pregnant women and women in their reproductive ages was developed. This was done in reference to the Dietary Reference Intake (DRI) by the Dietetics Association in the United
States of America (USA). The nutrient requirements vary from one individual to the other (FAO & Consultation, 2001). The various nutrients also have their specifications to the individual, thus, the requirement for protein varies from children to adults (Bianchi et al., 2016).

Guidelines for pregnant women in Ghana are summarised as follows (GDA, 2010)

1. Energy Requirements: Energy is the most important nutrient in determining weight gain during pregnancy. Recommendations for weight gain during pregnancy should be individualised according to pre-pregnancy body mass index (BMI) to improve pregnancy outcome and avoid excessive maternal postpartum weight retention and reduce the risk of later chronic diseases for the child (Murray & McKinney, 2014). Most pregnant women need daily calorie intake of 2,200 to 2,900 calories, which vary by their BMI, age and activity. No additional calories per day and 452 calories per day are needed during the second trimester for foetal growth (Murray & McKinney, 2014; McKinney et al., 2013).

2. Carbohydrates: Carbohydrates are essential for a pregnant woman especially in the last two trimesters (Krzepota & Putek-Szelag, 2014). Carbohydrate which will digest into glucose in the human system is the preferred energy source for the placenta and the foetus during pregnancy (GDA, 2010). The requirement for carbohydrate is 175 grams/day for pregnant women, increased from 130 grams/day for non-pregnant women.

3. Proteins: The protein intake for pregnant women increases to provide amino acids for foetal development, blood volume expansion and growth of foetal and maternal tissues, such as the breast and uterus. Proteins also contribute to the overall energy metabolism of the body (FAO & Consultation, 2001). The daily requirement for protein intake is 60 grams/day for pregnant women.
4. Fats: Fats provide energy and fat-soluble vitamins which are essential during pregnancy. Though essential fat intake should be lowered but not eliminated to decrease the calories in the body. Fat intake for pregnant women should be between 10 - 15% with most of the fats coming from sources of polyunsaturated and monounsaturated fatty acids such as fish, nuts and vegetable oils. The total daily cholesterol intake should be less than 300 mg/day of cholesterol.

5. Vitamins: Vitamins are very important nutrients during pregnancy and an adequate intake is largely required than the normal amounts to fulfil specific needs. All the vitamins are needed during pregnancy but extra Vitamin A is required. In Ghana, most pregnant women and infants are deficient in Vitamin A (GDA, 2010). Vitamin A is very essential for foetal growth and pregnant women’s ability to fight infections. The daily requirement for Vitamin A is 770 mg/day for the pregnant woman.

6. Minerals: Minerals are needed to help form tissues and other chemical substances during pregnancy. There are macro-minerals and micro-minerals. The macro-minerals are calcium, magnesium, phosphorus, and sodium. The micro-minerals that are of public health concern in Ghana are iron and iodine (GDA, 2010). Iron supplements aid in the formation of haemoglobin and certain enzymes which helps to prevent anaemia in pregnancy. Pregnant women must ensure a sufficient dietary intake of iron-rich foods coupled with Vitamin C rich foods to boost their haemoglobin levels. They must also ensure that they attend antenatal clinic and take the iron supplements that are given them.

7. Water: Water is also very essential during pregnancy. A pregnant woman should consume at least eight (8) to ten (10) glasses of fluids each day, of which four (4) to six (6) glasses should be water. Other beverages such as juices and milk can contribute water as well as other nutrients to the diet (Malek, 2015).
According to Lennox et al., (2017), the first six weeks after conception are extremely important for the most favourable development of the foetus. Therefore, pregnant women must be aware of and avoid nutritional risk factors and ingestion of harmful substances such as alcohol, tobacco and illegal drugs (Lennox et al., 2017; Malek 2015; Forbes & Graham, 2018).

### 2.4 Dietary Diversity among Pregnant Women

Dietary diversity is simply the act of eating varied foods from different food groups (Aliwo et al., 2019). According to Aliwo et al., (2019), pregnant women must eat foods from varied food groups to gain all the nutrients required during pregnancy. The Minimum Dietary Diversity for Women (MDDW) was developed as a guide to ensure that women in their reproductive ages consume foods that will provide them with micronutrients essential for their health (FAO, 2010). The dietary diversity for pregnant women can be assessed by using a multiple twenty-four-hour recall (24-hour recall). This means that the 24-hour recall provides a figure that can be used to represent the probability of micronutrient adequacy in the pregnant woman’s diet (FAO, 2010).

There are ten (10) major food groups that make up the minimum dietary diversity for women, six (6) optional food groups and two (2) required food groups that aid in finding the dietary diversity for pregnant women (FAO, 2010). A dietary diversity score is calculated for each person to identify whether the person engages in good dietary or poor dietary practices (FAO, 2010). Anyone who scored below the average of five (5) is classified as engaging in poor dietary practices and above the average is classified as engaging in good dietary practices.

In summary, the food groups and the foods that can be found in the groups are detailed in the table below.
Table 2.1: Food groups that make up the Minimum Dietary Diversity for Women

<table>
<thead>
<tr>
<th>Food Groups</th>
<th>Examples of foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains, white roots, tubers and plantain (Starchy staples)</td>
<td>Bread, noodles, porridge, potatoes, yam, cassava, plantain, sorghum, millet, banku, fufu, tuo zaafi, etc.</td>
</tr>
<tr>
<td>Pulses (Beans, peas and lentils)</td>
<td>Beans, chickpea, cowpea, pigeon pea, lentil and soybean, soybean products, etc,</td>
</tr>
<tr>
<td>Nuts and seeds</td>
<td>Cashew nut, peanuts, hazelnuts, sesame seed, sunflower, pumpkin, etc.</td>
</tr>
<tr>
<td>Dairy (Milk and milk products)</td>
<td>Milk, cheese, yoghurt and other milk products</td>
</tr>
<tr>
<td>Meat, poultry and fish (Flesh foods)</td>
<td>All meats, organ meat, chicken, meat from birds, fresh fish, dried fish, seafoods, shellfish, etc.</td>
</tr>
<tr>
<td>Eggs</td>
<td>Eggs from any type of bird</td>
</tr>
<tr>
<td>Dark-green leafy vegetables</td>
<td>Cassava leaves, iceberg lettuce, spinach, etc.</td>
</tr>
<tr>
<td>Other Vitamin A-rich fruits and vegetables</td>
<td>Ripe mango, ripe pawpaw, apricot (fresh or dried), dried peach, other leafy greens, etc.</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>Tomatoes, onions, okro, eggplant and locally available vegetables</td>
</tr>
<tr>
<td>Other fruits</td>
<td>Other fruits including wild fruits and 100% juice made from these fruits</td>
</tr>
<tr>
<td><strong>Optional Food Groups</strong></td>
<td></td>
</tr>
<tr>
<td>Insects and small protein foods</td>
<td>Insects, insects eggs, fish roe, spiders, land and sea snails, etc.</td>
</tr>
<tr>
<td>Red palm oil</td>
<td>Red palm oil, palm nut, palm nut pulp sauce</td>
</tr>
<tr>
<td>Other oils and fats</td>
<td>Oils, fats or butter added to food or used for cooking</td>
</tr>
<tr>
<td>Savoury and fried snacks</td>
<td>Crisps, chips, samosa, spring rolls, doughnuts, meat or fish turnovers, and other deep fried snack or street snacks.</td>
</tr>
</tbody>
</table>
### Table: Food Groups

<table>
<thead>
<tr>
<th>Sweets</th>
<th>Candy, chocolates, biscuits, cookies, cakes, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar-sweetened beverages</td>
<td>Fizzy drinks such as Coke, Malt, Alvaro, etc.</td>
</tr>
<tr>
<td></td>
<td>Chocolate drinks, sweet tea, etc.</td>
</tr>
</tbody>
</table>

#### Required Food Groups

- **Condiments and Seasonings**: All minor ingredients in mixed dishes. Spices, sauces, etc.
- **Other beverages and food**: Unsweetened tea, unsweetened coffee, herbal infusions and miscellaneous foods such as pickles and olives, etc.

#### 2.5 Attitudes towards Dietary Practices

Pregnant women develop certain attitudes at this stage of their lives such that their attitudes towards food also changes (Masuku & Lan, 2014). Due to certain pregnancy symptoms such as nausea, salivation, frequent spitting and others, some pregnant women refuse to eat (Zelalem et al., 2018). Other pregnant women will also lots of food at this stage with the aim of preventing the above-mentioned symptoms (Zelalem et al., 2018). These attitudes of pregnant women towards their dietary practices could be classified as positive or negative (Malek, 2015). Pregnant women with positive attitude towards dietary practices are assumed to be pregnant women who eat healthy and nutritious foods whereas pregnant women with negative attitudes towards dietary practices are known to eat unhealthy foods (Malek, 2015).

In a study conducted among French pregnant women, it was found that 60% of the pregnant women had negative attitudes towards their dietary practices such that they ate only foods they felt like eating without considering the nutrient content (Bianchi et al., 2016). Another study conducted in Kenya also revealed that pregnant women had a poor outlook on food as they ate to appease their gods and husbands and not what was recommended for them (Monchari et al., 2017). According to a study conducted in Northwest Nigeria, 58% of the pregnant women will...
eat their food cravings irrespective of the time of the day just to satisfy themselves and make them happy (Ugwa, 2016). Another study conducted in Australia also confirmed that, most pregnant women had a poor attitude towards their dietary practices especially in relation to foods that contain essential micronutrients for growth and development (Yeatman & Williamson, 2016). In Ghana, a study conducted in a suburb of Accra also revealed that most pregnant women were aware of food beliefs and yet still had a poor attitude towards their dietary practices (Boatemaa et al., 2018).

A study of dietary practices among pregnant women in Ghana also revealed that pregnant women were influenced by the household size and monthly income in relation to their food consumption (Koryo-Dabrah et al., 2012). Moreover, a study of dietary practices among pregnant women in a rural area revealed that, despite the considerable general knowledge that pregnant women had about their dietary practices, their behaviour towards food consumption was very poor (Gao et al., 2013). According to Arzoaquoi et al., (2015), food taboos and beliefs are widely practices among pregnant women knowingly and unknowingly. Women consistently avoid certain foods based on their food beliefs without even realising it as they have become accustomed to the custom and traditions of their culture (Arzoaquoi et al., 2015). Moreover, pregnant women from certain traditions would intentionally avoid the intake of certain foods due to their husband’s beliefs or commands (Abubakari & Jahn, 2016).

On the other hand, the findings of Koryo-Dabrah et al., (2012), revealed that pregnant women have positive attitude towards dietary practices. The findings revealed that these pregnant women good in the aspect of eating healthy meals and avoiding unhealthy meals during pregnancy, except they were low on diets that provided them with the essential micronutrients they needed for growth and development. This is consistent with a study by Tette et al., (2016), which found that a pregnant woman’s malnutrition status affected the foetus. Most pregnant women have their own opinions and beliefs about dietary practices. Some have traditional
beliefs whereas others have religious beliefs about food. Others also are influenced by media news. A study conducted by Arzoaquoi et al., (2015), revealed that pregnant women had traditional beliefs such as the avoidance of snails and eggs which are good sources of protein for a pregnant woman. Another study also revealed that, pregnant women avoided offals (the intestines of animals) based on their traditional beliefs (Aliwo et al., 2019). They believed that eating offals would affect the foetus in the womb. Another study also revealed that pregnant women avoided eating certain foods like seafood based on their religious beliefs (Suh NchangMugyia et al., 2016). Also, another study revealed that pregnant women chose foods based on what they read on the internet or any other media source and assumed to be healthy (Hambidge & Krebs, 2018).

Furthermore, some pregnant women intentionally consumed less food with the aim of avoiding large babies and that affected the pregnancy outcome most often (Kolosova & Miskova, 2017). This counters the assertion made by the FAO, (2010), that pregnant women should consume more food as their energy requirements are higher to ensure growth and development for the pregnant woman and the foetus. Also, the socio-economic status of the pregnant woman has been found to be associated with the pregnant woman’s attitude towards her dietary practices (Koryo-Dabrahe et al., 2012).

2.6 Factors Related to Dietary Practices among Pregnant Women

There are several factors that influence the dietary practices of pregnant women. This aspect is based on the fact that there is no one cause to a situation, several factors come into play. Some of these factors are level of education, employment status, socio-economic status, pregnancy trimester, and family size.
2.6.1 Level of education

The educational level of pregnant women is an important factor which contributes to their dietary practices. A pregnant woman with high education would be able to seek for good health care, good food based on the knowledge she has gained (Garmendia et al., 2015). On the other hand, a pregnant woman with low education may not be able to distinguish between healthy foods and unhealthy foods and has poor knowledge of dietary practices and its effect (Garmendia et al., 2015). Other studies have also shown that education does not really matter in terms of the dietary practices of a pregnant woman (Tette et al., 2016; Malek, 2015). In a study conducted by Mohsena et al., (2016), the educational level of a pregnant woman does not affect her dietary practices but her environment does.

2.6.2 Employment status

The employment status of a pregnant woman also determines her dietary practices. In a study conducted by Kolosova & Miskova, (2017), pregnant women who were employed had good dietary practices and could afford healthier foods as compared to unemployed pregnant women. On the other hand, another study also revealed that employed pregnant women had very poor dietary practices as they only purchased convenience foods and had little time to prepare healthy meals for themselves (Rosen et al., 2018). Another study also revealed that pregnant women who were unemployed could barely provide themselves with good food hence had poor dietary practices (Ghosh-Jerath et al., 2015).

2.6.3 Socio-economic status

The socio-economic status of the pregnant woman is also another important factor that contributes to the dietary practices of the pregnant woman. A pregnant woman with a good socio-economic status will be able to seek good health care, quality health services and provide
herself with healthy food (Darnton-Hill & Mkparu, 2015). She is also able to provide herself with the right products needed for her growth, development and wellbeing (Hambidge & Krebs, 2018). A pregnant woman with a poor socio-economic status or less income will have limitations in providing herself with the basic amenities needed to improve her health and development (Mohsena et al., 2016). This is confirmed in a study conducted by Ghosh-Jerath et al., (2015), which indicated that pregnant women with a lower income had poor dietary practices. Other studies have also noted that pregnant women with low family income have more disturbed dietary patterns (Ghosh-Jerath et al., 2015; Kolosova & Miskova, 2017). As a result, such pregnant women are at a higher risk of having complications at birth and giving birth to infants with low birth weight (Abubakari & Jahn, 2016).

This is not to say that pregnant women with a low income are not aware of eating a healthy diet, it is rather because they are not able to afford it (Zelalem et al., 2018). Low-income pregnant women are found to consume more starchy staple foods such as carbohydrate-rich foods rather than other foods rich in vitamins and minerals (Forbes & Graham, 2018).

### 2.6.4 Family size

Another factor that influences the dietary practices of pregnant women is their family size. Pregnant women from a large family size are found to eat healthy foods as they have lots of people to provide good food for them (Kavle & Landry, 2018). On the other hand, pregnant women from large family sizes do not get enough foods to eat as there are many mouths to feed in the household (Sonko, 2016). Other studies have also shown that pregnant women who come from a small family size made up of the nuclear family only are more likely to eat healthy foods and have positive pregnancy outcomes (Sholeye et al., 2014). Pregnant women from smaller family sizes receive a lot of care and attention and have the peace of mind needed to ensure good health and wellbeing (Bianchi et al., 2016). Unlike pregnant women from large family
sizes who are not able to get the privacy and peace of mind, they need to ensure enough rest for good health and wellbeing (Bianchi et al., 2016).

2.6.5 Trimester

Another factor that influences the dietary practices of pregnant women is the trimester in which they find themselves. The first six weeks after conception are very fragile and requires the pregnant woman to eat healthy foods for the growth and development of the pregnant woman and the foetus (Lennox et al., 2017). The second and third trimester of the pregnancy are also recognised as very important as the foetus in the womb is growing and the pregnant woman is getting closer to delivery (Forbes & Graham, 2018). A study conducted by Sholeye et al., (2014), revealed that pregnant women in their second and third trimester ate more food than those in their first trimester. Another study also revealed that pregnant women in their first trimester experienced difficulty in eating due to pregnancy symptoms (Abubakari & Jahn, 2016).

Dietary practices among pregnant women emanate from various factors such as the low intake of foods from the various food groups and the food cravings that pregnant women experience (Ghosh-Jerath et al., 2015). According to Rosen et al., (2018), the classification of foods based on socio-cultural beliefs or social functions have greatly affected maternal dietary practices. However, this study seeks to look at other factors such as the knowledge, attitude, socio-cultural beliefs and food beliefs of pregnant women and how it affects their dietary practices.
CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This section deals with the methodology of the study. It includes the research design, study location, variables of the study, study population, sampling technique and sample size, data collection and analysis, pre-test, ethical consideration, quality control and limitations of the study.

3.1 RESEARCH DESIGN

In this study the quantitative approach was adopted, using a cross-sectional study design. The study design gathered information on pregnant women’s knowledge of dietary practices, their attitudes towards dietary practices, their socio-cultural beliefs and a twenty-four-hour recall (24-hr recall) of the pregnant women attending antenatal clinic at the University of Ghana Hospital and the Madina Polyclinic. The cross-sectional study design was used because it was less expensive, ethically safe and simple to use.

3.2 STUDY LOCATION

The study was conducted at the University of Ghana Hospital in Legon and the Madina Polyclinic around Rawlings Circle. The University of Ghana Hospital is situated in Legon, a suburb of the Greater Accra region. It is situated about twelve (12) kilometres (7.5 miles) north-east of the city centre in the Accra Metropolis District, a district in the Greater Accra Region of Ghana (A.M.A, 2015). Legon is known to be home to the University of Ghana and also home to other educational institutions like the Presbyterian Boys’ Senior High School (PRESEC-Legon), Ghana Institute of Management and Public Administration (GIMPA) and University of Professional Studies, Accra (UPSA). It is also home to a few Ghanaians and it is
adjacent to one of the most prestigious residential suburbs of Accra – East Legon and only about twenty (20) minutes’ drive from the Kotoka International Airport (A.M.A, 2015).

The University of Ghana Hospital, popularly known as the Legon Hospital is located in the Greater Accra Region, the capital city of Ghana. The Hospital is a six hundred and seventeen (617) bed medical facility with a maternal unit. The University of Ghana hospital has a maternal unit where the pregnant women receive antenatal care.

![Figure. 3.1 A map showing the University of Ghana Hospital and the road to Madina Polyclinic.](http://ugspace.ug.edu.gh)

**SOURCE:** TDB, 2015.

The maternal unit at the University of Ghana Hospital attends to an average of two hundred and fifty (250) pregnant women in a month though the numbers are not always the same every time. Antenatal clinic runs from Monday to Thursday at the University of Ghana Hospital but the highest number is usually seen on Wednesdays and Thursdays. The hospital sees about fifteen (15) to twenty (20) pregnant women at the Maternal unit every day for antenatal care.
The Madina Polyclinic is a government clinic situated around the Rawlings Circle, Madina. It is the annex to the Madina Polyclinic at Kekele and it is 1.6 kilometres away from the Polyclinic at Kekele. Both Polyclinics can be found in the La Nkwantanang District in Accra. The Madina Polyclinic offers antenatal services to about 40% of the pregnant women in the district. The Madina Polyclinic has a maternal unit, which has over 400 pregnant women coming for antenatal care. The antenatal clinic at the Madina Polyclinic runs every day of the week with the exception of Tuesdays. The Polyclinic sees to about thirty (30) pregnant women attending antenatal clinic in a day. They also render services such as pre-pregnancy counselling, postnatal care, labour or delivery services, child welfare clinic, family planning and home visit. Records at these hospitals show that a lot of pregnant women visit the facility and are attended to.

3.3 STUDY VARIABLES

The dependent variable of the study was;

- Dietary practices among pregnant women.

The independent variables were;

- Demographic characteristics including age, marital status, level of education, religious affiliation, ethnic group and occupation.
- Pregnancy history and related indicators such as month of pregnancy, number of children and trimester related variables.
- The knowledge of dietary practices among pregnant women.
- The attitudes of pregnant women towards dietary practices.
- Socio-cultural beliefs of the pregnant women and how it influences their dietary practices.
3.4 STUDY POPULATION

The population of the study consisted of all pregnant women attending antenatal clinic at the University of Ghana Hospital, Legon and the Madina Polyclinic, Rawlings Circle both in the Greater Accra Region. The maternity unit of the hospitals was selected as the main focus of the study.

3.5 SAMPLING

3.5.1 SAMPLE SIZE CALCULATION

The sample size was determined using the formula \( n = \frac{pq \cdot (Z_{\alpha/2}/E)^2}{\text{(0.05)}^2} \) as proposed by Saunders et al., (2012); where \( n \) is estimated sample size; \( Z \) is the critical score based on the desired degree of confidence; \( p \) is the prevalence rate; \( q \) is the compliment of the proportion thus, \( 1-p \) and \( E \) is the desired margin of error. A prevalence rate of 62% was chosen for prevalence from a previous study done by Abubakari & Jahn, (2016).

\[
\begin{align*}
  n &= \frac{(0.62 \times 0.38)(1.96)^2}{(0.05)^2} \\
  &= 362.03 \\
  &= 362
\end{align*}
\]

The assumption was that the data was normally distributed. Based on this formula and the assumption, an approximate value of 362 was obtained. However, an error margin of 10% was allowed for non-responses of questionnaire as according to the rule of thumb, the lowest margin of error to be allowed in research is 10%. The total sample size, therefore, was 340.

3.5.2 SAMPLING PROCEDURE

The systematic random sampling technique was used for data collection. It is a method of
sampling in which every participant was chosen for inclusion in the sample after the first participant for the day was selected at random at an interval rate depending on the total population of participants in the day.

Hospitals for the study were chosen based on the density of their antenatal population. The average daily attendance at the Madina Polyclinic was 150 pregnant women; the total attendance for a day represented 50% of the respondent population. Using the systematic random sampling and an interval value of 5, every 5th pregnant woman was selected to get an average of 30 women from the antenatal care unit of the Madina Polyclinic. In effect, a sample size of 210 was obtained over a seven-day period.

The University of Ghana Hospital also had a daily average of 40; the total attendance for the week represented 40% of the total respondent’s population. Using systematic random sampling and an interval value of 3, every 3rd pregnant woman was selected to get an average of 15 pregnant women from the antenatal care unit of the University of Ghana Hospital. In effect, a sample size of about 130 was obtained over a seven-day period. More pregnant women were selected from the Madina Polyclinic since the facility attended to more pregnant women than the University of Ghana Hospital. The systematic sampling technique gave every pregnant woman an equal chance to participate in the study.

3.6 DATA COLLECTION TECHNIQUE

The instrument that was used for data collection was a structured questionnaire, which was made easy to understand for the respondents. The structured questionnaire was made up of mostly close-ended questions and a few open-ended questions on the dietary practices among pregnant women, demographics of the respondents, their attitudes towards dietary practices and other variables were administered to the respondents. The questionnaire was self-administered to the respondents and interview administered to the respondents who could not
read or write. Though the sample size calculated was three hundred and forty (340), it was rounded up to three hundred and fifty (350) pregnant women for the interview and to make the data analysis quite easy to handle. Due to the sample size, two research assistants were included to assist in the data collection process to make the process less difficult. These assistants were trained on how to collect data using the questionnaire as a guide. Local languages such as Ga, Ewe and Twi were used where applicable, especially with pregnant women who were not able to read and write in the English language. Interviews for the data collection were carried out at the University of Ghana Hospital Maternal Unit and the Madina Polyclinic Maternal Unit where the respondents attended antenatal clinic. The interview was mostly conducted before the pregnant women began their antenatal care education to avoid any distraction during their health talks and education.

3.7 DATA ANALYSIS

Data collected was entered into Microsoft Excel 2011 and then imported into the Statistical Package for Social Science (SPSS) Statistics version 22 software. Data editing and formatting was done to ensure the correctness of data. Data was also explored for normality using skewness and kurtosis before the analysis was carried out.

Data analysis was mainly descriptive statistics which was conducted with the help of frequency tables. This was essential to achieve the aims of the study such as to identify pregnant women’s knowledge about dietary practices. The test of association was used to determine the inter-relationships between some of the variables of study like the association between socio-cultural beliefs and dietary practices, the association between dietary practices and demographic characteristics and the association between demographic characteristics and knowledge of dietary practices.
3.8 PRE-TEST
Pre-test was conducted at the Mamprobi Polyclinic with pregnant women attending antenatal clinic to test the validity, reliability and accuracy of the questionnaire. The data was analyzed using the Statistical Package for Social Science (SPSS) version 22 software and some adjustments were made to the questionnaire. The adjustments ranged from typographical errors to some of the questions that were difficult to understand.

3.9 ETHICAL CONSIDERATION
Ethical clearance was sought from the Ghana Health Service Ethical Review Committee. Permission was obtained from the administration of the University of Ghana Hospital and the Madina Polyclinic respectively to carry out the study at the antenatal unit of both hospitals. The reason for conducting the study was thoroughly explained to the participants and both verbal and written consent was obtained. Code numbers were used on the questionnaires to assure confidentiality of study participants. The participants were briefed on the research and given an informed consent form to fill if they were willing to participate in the study. No participant was coerced or convinced to participate in the study to avoid conflict of interest. The interview was done one after the other with the pregnant women to ensure privacy and the filled questionnaires were placed in a bag without the researcher or the research assistants looking at the responses of the participants. Pregnant women who were not well were exempted from the study to avoid any potential risks and the participants were given a small package after participating in the study as a form of appreciation. Participants who wished to withdraw from the study were allowed to do so and also take a package for volunteering to be a part of the study.
3.10 QUALITY CONTROL

The questionnaire for the study was created with particular reference to the objectives of the study and literature. Two research assistants were trained to ensure that the accurate and reliable data was collected within the shortest possible time. The questionnaire item was translated into local languages such as Ga, Ewe and Twi during the interview to pregnant women who could not read and write in the English language.

The sections in the questionnaire were in five parts. The sections were; socio-demographic characteristics, knowledge of dietary practices, attitudes towards dietary practices, socio-cultural beliefs and dietary practices and a twenty four hour recall (24-hour recall). All answered questions were compiled and cross-checked for errors and omissions to get a complete data for analysis.

3.11 LIMITATION OF THE STUDY

Data collection at the health facilities was very stressful as they demand a lot of ethical consideration and confidentiality. During the data collection process, some of the respondents would start the interview and not be able to complete it because they had to quickly do some laboratory tests before seeing the doctor and did not come back to complete the questionnaire. Language was also a barrier at some point when the pregnant women who were interviewed could only speak Dagbani. Based on the results presented, it was observed that all the items under knowledge of dietary practices were positive and required the same answer which probably affected the responses given by the respondents and the reason why a large number of pregnant women had good general knowledge of dietary practices.
CHAPTER FOUR

RESULTS OF THE STUDY

4.0 Introduction

This chapter presents the results in accordance with the objectives of the study: to identify pregnant women’s knowledge of dietary practices, to assess the dietary practices of pregnant women and to determine the association between socio-cultural beliefs and dietary practices.

4.1 Socio-Demographic Information of Respondents

In this study, three hundred and fifty (350) pregnant women from the Legon Hospital and the Madina Polyclinic were interviewed and the response rate was over 80%. Their responses were analysed to provide answers to the objectives of the study.

The results show that the minimum age of respondents was 17 years and the maximum age was 41 years. The mean age of respondents was 28 years (S.D = 5.16). Most of the respondents (78%) were married. In terms of education, virtually all respondents (97%) had at least some basic education. Religion-wise, more than 80% of the respondents were Christians. Also, the Akan ethnic group was more represented with 127 respondents making up 36.3% of total respondents followed by the Ewes (28.3%) and the Ga-Adangbes (14.6%).

In terms of employment status, more than half of the respondents (52%) were self-employed. In addition, a large majority (44%) of the respondents were into the sales and services industry. The monthly income of the respondents shows that close to 90% of respondents earn a minimum of GHS200.00 a month. In relation to family size, results show that a large majority of respondents (85.4%) were in a rather small family, ranging between 2-4 individuals. This information is shown in Table 4.1.
# Table 4.1: Socio-Demographic Information of Respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17-20yrs</td>
<td>24</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>21-30yrs</td>
<td>211</td>
<td>60.3</td>
</tr>
<tr>
<td></td>
<td>31-41yrs</td>
<td>115</td>
<td>32.9</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Single</td>
<td>37</td>
<td>10.6</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>273</td>
<td>78.0</td>
</tr>
<tr>
<td></td>
<td>Co-habiting</td>
<td>40</td>
<td>11.4</td>
</tr>
<tr>
<td>Educational Level</td>
<td>None</td>
<td>11</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>16</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>JHS / Middle School</td>
<td>100</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>SHS/ O-level/ A- level</td>
<td>92</td>
<td>26.3</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>131</td>
<td>37.4</td>
</tr>
<tr>
<td>Religious Affiliation</td>
<td>None</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Christianity</td>
<td>286</td>
<td>81.7</td>
</tr>
<tr>
<td></td>
<td>Islam</td>
<td>62</td>
<td>17.7</td>
</tr>
<tr>
<td>Ethnic group</td>
<td>Ga-Adangbe</td>
<td>51</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>Ewe</td>
<td>99</td>
<td>28.3</td>
</tr>
<tr>
<td></td>
<td>Akan</td>
<td>127</td>
<td>36.3</td>
</tr>
<tr>
<td></td>
<td>Dagbani</td>
<td>44</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>29</td>
<td>8.3</td>
</tr>
<tr>
<td>Occupation</td>
<td>Managerial</td>
<td>79</td>
<td>22.6</td>
</tr>
<tr>
<td></td>
<td>Clerical</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Sales and services</td>
<td>154</td>
<td>44.0</td>
</tr>
<tr>
<td></td>
<td>Skilled manual</td>
<td>60</td>
<td>17.1</td>
</tr>
<tr>
<td></td>
<td>Unskilled manual</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Agriculture</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>48</td>
<td>13.7</td>
</tr>
<tr>
<td>Monthly Income</td>
<td>50-199GHS</td>
<td>45</td>
<td>12.9</td>
</tr>
<tr>
<td></td>
<td>200- 499GHS</td>
<td>100</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>500- 999GHS</td>
<td>137</td>
<td>39.1</td>
</tr>
<tr>
<td></td>
<td>1000GHS and above</td>
<td>68</td>
<td>19.4</td>
</tr>
<tr>
<td>Family size</td>
<td>2-4</td>
<td>299</td>
<td>85.4</td>
</tr>
<tr>
<td></td>
<td>5-7</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td></td>
<td>8 and above</td>
<td>8</td>
<td>2.3</td>
</tr>
</tbody>
</table>
4.1.1 Pregnancy History of Respondents

Table 4.2 indicates the pregnancy history of respondents. The results show that more than 70% of respondents commenced antenatal visits within the first trimester. About 85.4% of respondents were in their second and third trimester. The descriptive statistics also show that about 65% of respondents have had at least one full-term pregnancy.

Table 4.2: Pregnancy History of Respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time for first antenatal visit</td>
<td>1(^{st}) trimester</td>
<td>257</td>
<td>73.4</td>
</tr>
<tr>
<td></td>
<td>2(^{nd}) trimester</td>
<td>88</td>
<td>25.1</td>
</tr>
<tr>
<td></td>
<td>3(^{rd}) trimester</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Current trimester of pregnancy</td>
<td>1(^{st}) trimester</td>
<td>51</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>2(^{nd}) trimester</td>
<td>172</td>
<td>49.1</td>
</tr>
<tr>
<td></td>
<td>3(^{rd}) trimester</td>
<td>127</td>
<td>36.3</td>
</tr>
<tr>
<td>Previous full term pregnancies</td>
<td>None</td>
<td>123</td>
<td>35.1</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>210</td>
<td>60.0</td>
</tr>
<tr>
<td></td>
<td>4 and above</td>
<td>17</td>
<td>4.9</td>
</tr>
</tbody>
</table>

4.2 Knowledge of Dietary Practices among Pregnant Women

The first objective was to investigate pregnant women’s knowledge of dietary practices. Results showed that all the items under knowledge had high scores of strongly agree and agree. Items such as eating a balanced diet provide good nutrition for the pregnant woman and eating a balanced meal helps the baby to develop well had 88.3% and 86.3% respectively for strongly agree. However, 16.5% of the respondents disagreed that carbohydrate-rich foods strengthen the pregnant mother and the baby. About 12.6% of the respondents also had no idea of iron-folate supplements and its function. The total summation of the items under knowledge was found with scores ranging from five (5) to twenty-five (25) to determine the level of the knowledge of the respondents concerning dietary practices. Respondents who scored below an
average of thirteen (13) were classified as having low knowledge and respondents who scored above the average, were classified as having high knowledge. The results showed that, most of the respondents (91.7%) had high knowledge of dietary practices whiles 8.3% of them had low knowledge of dietary practices. See Table 4.3.

Table 4.3: Knowledge of Dietary Practices of Respondents

<table>
<thead>
<tr>
<th>Items</th>
<th>Strongly disagree (%)</th>
<th>Disagree (%)</th>
<th>Don't Know (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating a balanced diet provides good nutrition for the pregnant woman</td>
<td>0</td>
<td>1.7</td>
<td>1.7</td>
<td>8.3</td>
<td>88.3</td>
</tr>
<tr>
<td>Eating a balanced meal helps the baby to develop well</td>
<td>0.2</td>
<td>0.6</td>
<td>4.0</td>
<td>8.9</td>
<td>86.3</td>
</tr>
<tr>
<td>Iron-folate supplements prevent the pregnant woman from anaemia</td>
<td>0.6</td>
<td>1.7</td>
<td>12.6</td>
<td>16.6</td>
<td>68.6</td>
</tr>
<tr>
<td>A healthy diet contains all food nutrients in their right proportion</td>
<td>0.3</td>
<td>5.4</td>
<td>7.1</td>
<td>25.4</td>
<td>61.7</td>
</tr>
<tr>
<td>Carbohydrate-rich foods strengthen the pregnant mother and the baby</td>
<td>5.1</td>
<td>11.4</td>
<td>6.3</td>
<td>24.9</td>
<td>52.3</td>
</tr>
</tbody>
</table>

4.3 Dietary Practices of Respondents

The second objective was to assess the dietary practices of the pregnant women by taking the 24-hour recall of the respondents. The 24-hour recall was used to identify the dietary diversity of the respondents. The results show that most (99.1%) of the respondents consume foods that can be found in the grains, white roots, tubers and plantain food group and 79.1% of them consumed foods that were in the meat, poultry and fish food group. However, 48.6% of the respondents consumed foods that were in the dark-green leafy vegetables food group which was a little below average. Also, 32.6% of the respondents consumed other fruits. It is important to note that, each pregnant woman chose foods from more than one food group, hence the overlaps. The total summation of the various food groups was found to calculate the total dietary diversity score for each respondent. The scores ranged from one (1) – ten (10), where an average score of five (5) and below was classified as poor dietary practices and an average score above five (5) was classified good dietary practices. The results showed that
42.9% of the respondents engaged in poor dietary practices whereas 57.1% of them engaged in good dietary practices. See Figure 4.1.

![Figure 4.1 Percentage distributions of food types consumed by the respondents](image-url)

**Figure 4.1 Percentage distributions of food types consumed by the respondents**
4.3.1 Attitude of Respondents towards Dietary Practices

The attitude of respondents towards dietary practices was also taken for assessing the dietary practices of pregnant women. The results showed that most of the pregnant women had an appreciable attitude towards their dietary practices. Whereas 43.1% of respondents experience difficulty in eating during pregnancy, at least 80% of respondents eat anything they feel like irrespective of the time. The total summation of the items under attitude was further computed with a range of scores from four (4) to twenty (20) to categorize attitude into positive and negative attitude towards dietary practices. Anyone who scored below the average of twelve (12) was classified as having a negative attitude towards dietary practices and anyone who scores above the average was classified as having positive attitude towards dietary practices. The findings revealed that 14.9% of the respondents had negative attitude towards dietary practices whiles 85.1% of the respondents had positive attitude towards dietary practices Table 4.4 captures this information.

Table 4.4: Attitudes towards Dietary Practices

<table>
<thead>
<tr>
<th>Items</th>
<th>Disagree (%)</th>
<th>Don’t Know (%)</th>
<th>Agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A pregnant woman must eat more food</td>
<td>21.5</td>
<td>2.0</td>
<td>76.6</td>
</tr>
<tr>
<td>Difficulty in eating during pregnancy</td>
<td>43.1</td>
<td>6.9</td>
<td>50.0</td>
</tr>
<tr>
<td>A pregnant woman must eat anything she feels like</td>
<td>9.7</td>
<td>2.3</td>
<td>88.0</td>
</tr>
<tr>
<td>A pregnant woman must eat what she craves for at anytime</td>
<td>16.5</td>
<td>3.1</td>
<td>80.3</td>
</tr>
</tbody>
</table>

4.4 Composite Score of Knowledge, Attitudes and Dietary Practices

To identify the respondents and their scores on the knowledge of dietary practices, their dietary practices and their attitudes towards dietary practices, a composite score was found. All respondents who fell below the average score were classified as low knowledge (8.3%), poor dietary practices (42.9%) and negative attitudes (14.9%) respectively. The respondents who
fell above the average score were classified as high knowledge (91.7%), good dietary practices (57.1%) and positive attitude (85.1%) respectively. See Table 4.5.

Table 4.5: Composite Score of Knowledge, Attitudes and Dietary Practices

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of Knowledge</strong></td>
<td></td>
</tr>
<tr>
<td>High Knowledge</td>
<td>91.7</td>
</tr>
<tr>
<td>Low Knowledge</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Dietary Practices</strong></td>
<td></td>
</tr>
<tr>
<td>Good Dietary Practices</td>
<td>57.1</td>
</tr>
<tr>
<td>Poor Dietary Practices</td>
<td>42.9</td>
</tr>
<tr>
<td><strong>Attitudes Towards Dietary Practices</strong></td>
<td></td>
</tr>
<tr>
<td>Positive Attitude</td>
<td>85.1</td>
</tr>
<tr>
<td>Negative Attitude</td>
<td>14.9</td>
</tr>
</tbody>
</table>

4.5 Socio-Cultural Beliefs and Dietary Practices

The third objective was to determine the association between socio-cultural beliefs and dietary practices. Before the correlation was done, the socio-cultural beliefs were analyzed using frequencies. The findings reveal that respondents (85.2%) are advocates of taking in lots of palm nut soup to get enough breast milk as well as taking in enough carbohydrates to strengthen the foetus in the womb (75.2%). Remarkably, respondents were strongly against taking in little alcohol (92.3%), taking in bentonite clay (76.9%) and also not consuming chicken or eggs (79.7%). The information above is shown in Table 4.6
Table 4.6: Socio-cultural beliefs

<table>
<thead>
<tr>
<th>Socio-Cultural Beliefs</th>
<th>Disagree (%)</th>
<th>Neutral (%)</th>
<th>Agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Snails are not advisable for pregnant women as they can make the baby dumb</td>
<td>51.4</td>
<td>12.0</td>
<td>36.5</td>
</tr>
<tr>
<td>2. A pregnant woman must not eat chicken or eggs</td>
<td>79.7</td>
<td>3.4</td>
<td>16.9</td>
</tr>
<tr>
<td>3. Offals can destroy the womb</td>
<td>49.4</td>
<td>29.7</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>Food Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pregnant woman must take lots of palm nut soup to get enough breast milk</td>
<td>8.3</td>
<td>6.6</td>
<td>85.2</td>
</tr>
<tr>
<td>5. Enough carbohydrates makes the foetus in the womb stronger</td>
<td>14.4</td>
<td>9.4</td>
<td>75.2</td>
</tr>
<tr>
<td>6. Cold foods like ice cream can cause miscarriage</td>
<td>51.4</td>
<td>16.3</td>
<td>32.3</td>
</tr>
<tr>
<td>7. Sugarcane causes a lot of pain during pregnancy</td>
<td>49.4</td>
<td>22.0</td>
<td>28.6</td>
</tr>
<tr>
<td>8. Pineapples must be avoided during the first trimester</td>
<td>61.7</td>
<td>12.0</td>
<td>26.2</td>
</tr>
<tr>
<td>9. Salt petre makes the womb elastic and delivery very easy</td>
<td>61.5</td>
<td>17.7</td>
<td>20.9</td>
</tr>
<tr>
<td>10. Bentonite clay is very healthy for a pregnant woman</td>
<td><strong>76.9</strong></td>
<td>9.7</td>
<td>13.4</td>
</tr>
<tr>
<td>11. It is okay for a pregnant woman to drink a little alcohol</td>
<td><strong>92.3</strong></td>
<td>1.7</td>
<td>6.0</td>
</tr>
</tbody>
</table>

4.5.1 Correlation Between Socio-cultural Beliefs and Dietary Practices

The Pearson correlation was used to determine the relationship between socio-cultural beliefs and dietary practices. The constructs of each variable were transformed into one. The correlation analysis from Table 4.7 showed a statistically significant negative relationship between socio-cultural beliefs and dietary practices $r(350) = -0.116, p < 0.05$. This means that as the socio-cultural beliefs of respondents’ increase, their dietary practices decreases. That is to say that, the more the respondents adhere to their socio-cultural beliefs, the less likely they are to have good dietary practices.
Table 4.7: Correlation between socio-cultural beliefs and dietary practices

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Socio-cultural beliefs</td>
<td>1.00</td>
<td>-0.116*</td>
</tr>
<tr>
<td>2. Dietary Practices</td>
<td>-0.116*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed), “p < 0.05 level (2-tailed)”.

4.6 Association between Socio-Demographics and Dietary Practices

The chi-square test statistics was used to determine if there is any significant association between the socio-demographic characteristics and dietary practices among the pregnant women. The analysis showed that dietary practices were not statistically significant dependent on the age and marital status of the respondents (p > 0.05). However, the knowledge of dietary practices among the pregnant women was statistically significant dependent on the educational level, the employment status, religious affiliation and trimester in which the pregnant woman was all at p > 0.01. Table 4.8 below illustrates the chi-square test statistics of the association between the socio-demographic characteristics and the knowledge of dietary practices by the respondents.

Table 4.8: Association between Socio-demographic Characteristics and Knowledge of Dietary Practices

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-Square Value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>3.643</td>
<td>0.518</td>
</tr>
<tr>
<td>Marital status</td>
<td>7.218</td>
<td>0.084</td>
</tr>
<tr>
<td>Educational level</td>
<td>31.763</td>
<td>0.012**</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td>15.466</td>
<td>0.004**</td>
</tr>
<tr>
<td>Employment status</td>
<td>37.501</td>
<td>0.002**</td>
</tr>
<tr>
<td>Trimester</td>
<td>33.081</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

*significant at p < 0.05

**significant at p < 0.01
4.7 Logistic regression analysis of factors that influence dietary practices

The factors found to be significant from the chi-square test statistics above, as well as other factors found to be significant in other studies, were also analysed using logistic regression models in order to find out if those associations will exist while controlling for some of the factors. The odds ratios were found using a simple binary logistic regression model of good dietary practices and some independent variables. The results showed that, for a pregnant woman attending ANC at the Legon Hospital and the Madina Polyclinic in this study, the level of education, employment status and the trimester in which the pregnant woman was, were factors that were associated with good dietary practices.

It was found that, the odds of engaging in good dietary practices was two times higher in women in their second trimester than women in their first trimester OR = 2.097. This was statistically significant (p-value = 0.04, p < 0.05). It was much higher for women in third trimester to engage in good dietary practices than women in their first trimester OR= 2.634. This was statistically significant (p-value = 0.02, p < 0.05).

The odds of engaging in good dietary practices was also two times higher in pregnant women who were employed as compared to pregnant women who were unemployed Odds Ratio (OR) = 2.042. This was statistically significant (p-value = 0.02, p < 0.05). See table 4.9.
Table 4.9: Association between dietary practices and some predictors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (OR)</th>
<th>P-value</th>
<th>95% Confidence Interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>1(Ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary education</td>
<td>0.548</td>
<td>0.394</td>
<td>0.138 – 2.182</td>
</tr>
<tr>
<td>Junior high/ middle school</td>
<td>0.803</td>
<td>0.740</td>
<td>0.220 – 2.936</td>
</tr>
<tr>
<td>Senior high/O-level/A-level</td>
<td>1.362</td>
<td>0.425</td>
<td>0.637 – 2.911</td>
</tr>
<tr>
<td>Tertiary</td>
<td><strong>1.613</strong></td>
<td><strong>0.015</strong></td>
<td>0.872 – 2.572</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>1(Ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td><strong>2.042</strong></td>
<td><strong>0.017</strong></td>
<td>0.836 – 4.984</td>
</tr>
<tr>
<td>Self-employed</td>
<td>1.581</td>
<td>0.243</td>
<td>0.732 – 3.415</td>
</tr>
<tr>
<td><strong>Trimester</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st trimester</td>
<td>1(Ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd trimester</td>
<td><strong>2.097</strong></td>
<td><strong>0.041</strong></td>
<td>1.017 – 4.324</td>
</tr>
<tr>
<td>3rd trimester</td>
<td><strong>2.634</strong></td>
<td><strong>0.016</strong></td>
<td>1.202 – 5.776</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

DISCUSSION

5.1 Introduction

The aim of the study was to determine the factors that influence dietary practices among pregnant women who attend Antenatal clinic at the University of Ghana Hospital and the Madina Polyclinic, all in the Greater Accra Region. This section discusses the results of the study based on the objectives of the study.

Dietary practices among pregnant women are of great concern due to the increased rate of anaemia in pregnancy, and other dietary-related diseases such as gestational diabetes and obesity (Koryo-Dabrah et al., 2012). This study considered pregnant women’s knowledge on dietary practices, the dietary practices they indulged in and the association between socio-cultural beliefs and dietary practices of the pregnant women. The study found out that 91.7% of the pregnant women had good knowledge about dietary practices and most of these pregnant women (37.4%) had some tertiary education. This level of education arguably means that the pregnant women are able to inculcate some form of formal education related to dietary practices that they may have studied as a recipe for good dietary practices during their pregnancy period. According to Suh NchangMugyia et al, (2016), the level of education of pregnant women influence their level of knowledge on dietary practices. The level of education also means that the pregnant women invariably are able to assimilate information from the media (print and electronic) on dietary practices during pregnancy. Given the cosmopolitan nature of the study area, it was natural to find different ethnic groups well represented with little variation among the distribution.
5.2 Knowledge of Dietary Practices among Pregnant Women

The results indicated that most of the respondents (91.7%) were very knowledgeable about dietary practices. Most of the respondents who were very knowledgeable had at least primary education as seen in the results. Some of these respondents mentioned that they read posts from the media (print or electronic) and also take the education at the antenatal clinic seriously. Despite the fact that most of the respondents had knowledge about dietary practice, the number of pregnant women (42.9%) with poor dietary practices was relatively high. This is as a result of pregnant women eating their food cravings at any time of the day as seen in a study conducted by Sonko, (2016). Also, the pregnant women had some misconceptions in a range of areas, including standard serving sizes, nutrient content such as dietary fibre, saturated fat, and vitamin A of certain foods and the importance of key nutrients in pregnancy (Yeatman & Williamson, 2016). Though the pregnant women had some knowledge, certain areas such as their socio-cultural beliefs and attitudes towards dietary practices affected their dietary practices.

Other studies also showed that pregnant women had very little knowledge of dietary practices and that affected the pregnancy outcome and their choice of food (Fekadu 2013; Sonko 2016; Symington et al., 2018). On the other hand, pregnant women in this study displayed a high level of knowledge and this could be as a result of an improvement in the nutrition education given during the antenatal care clinic. It could also be as a result of high educational level among the pregnant women in this study.

The results of the study also showed that most of the pregnant women strongly agreed to the items they were quizzed on in relation to knowledge. It is therefore important to note that, quite a number of them (14.9%) had no idea of the role that the iron-folate supplements played in the life of pregnant women. Similar to a study conducted by Fekadu Beyene, (2013), the knowledge that food during pregnancy is important for the bodies’ energy and heat, proper
functioning of the body, growth and development of the foetus, was high but the function of iron-rich foods and supplements was not known. Moreover, the pregnant women in this study (87.1%), strongly agreed to the fact that a healthy diet should contain all the food nutrients in their right proportion, yet this was not seen in their dietary practices as most of the pregnant women lacked in some of the key food groups essential for growth and development in pregnancy.

5.3 Dietary Practices among Pregnant Women

The dietary practices of the pregnant women were classified as good dietary practices and poor dietary practices. The results showed that 42.9% of the respondents had poor dietary practices and 57.1% of the respondents had good dietary practices.

The findings of this study revealed that most of the pregnant women consumed more foods from seven food groups out of the sixteen food groups that were analysed. Almost all the pregnant women (99.1%) in this study consumed foods from the food group; grains, white roots, tubers and plantain as seen in another study conducted in Ethiopia. The study revealed that 92.4% of the respondents consumed foods in the grains, white roots, tubers and plantain food group (Sonko, 2016). The protein-based foods, meat, poultry, fish, eggs, milk and milk products were also consumed by quite a number of respondents (79.1%). This can be compared to a study conducted in the northern part of Ghana which also showed that most pregnant women consumed foods rich in carbohydrate and protein (Abubakari & Jahn, 2016). This is because, carbohydrate and protein seem to form the basis of all the foods that are widely spread and mostly eaten in Ghana (Koryo-Dabrah et al., 2012). Dark-green leafy vegetables and other Vitamin A rich foods which form the basis of combating anaemia in pregnancy were consumed by less than half of the respondents, 48.6% and 43.7% respectively. The lack of iron rich foods and Vitamin A rich foods in a pregnant woman’s meal can be also be identified as the one of the leading causes of anaemia in pregnancy (Symington et al., 2018). Other food groups such
as Pulses (beans, peas and lentils), legumes, nuts and seeds and red palm oil provide the pregnant woman with essential macronutrients and micronutrients such as Fats, Calcium, Vitamin B3, Vitamin B12, Vitamin K, Zinc, Fibre, Phosphorus, Magnesium and others. All these micronutrients are essential for the growth and development of the pregnant mother and the foetus. Unfortunately, foods in these food groups were consumed by just a few of the respondents. Other studies also show that, pregnant women consumed very little of foods that contain the micronutrients essential for the pregnant women (Sonko 2016; Abubakari & Jahn, 2016; Symington et al., 2018). Close to half of the respondents also consumed foods that were in the food groups of sugar sweetened beverages, savoury and fried snacks and other fruits (fruit juices) thus, 48.6%, 48.3% and 32.6% respectively. These foods are normally eaten in between meals and contain a lot of sugar and cholesterol which are not advisable for the health of the pregnant woman (Symington et al., 2018). Foods from these food groups can cause gestational diabetes and obesity during and after the pregnancy (Nnam, 2015).

5.4 Attitudes towards Dietary Practices

The results of the study showed that 85.1% of the respondents had a positive attitude towards dietary practices and 14.9% of the respondents had a negative attitude towards dietary practices. This could be as a result of various reasons as pregnancy varies from one individual to the other. The results of the study revealed that 76.6% of the respondents agreed that they eat more food as compared to their non-pregnancy state. According to Bianchi et al., (2016), most pregnant women eat more food during pregnancy because they believe that they are carrying an extra individual who also needs to be fed and therefore end up eating more than the energy requirements for the day.

Also, 50% of the pregnant women expressed that they had difficulty in eating during pregnancy whereas 43.1% of them expressed that they had no difficulty whatsoever eating during pregnancy. Most of the respondents who expressed difficulty were women who were pregnant
for the first time and those who had no difficulty were women who have been pregnant before. It is also very important to note that, some of the women who expressed that they had difficulty during eating were women have had full-term pregnancies before. This clearly brings out the fact that, every pregnancy has its own symptoms and concerns and should be treated as such (Jingjing et al., 2017). According to Sonko, (2016), most pregnant women ate their food cravings or whatever they felt like eating at any time of the day. The results of the study also clearly showed that most of the pregnant women ate anything they felt like eating and whatever they craved for at any time, thus, 88% and 80.3% respectively. The respondents explained that, they would not be comfortable if they do not eat what they felt like eating or whatever they craved for irrespective of the time. According to Badasu et al., (2018), unless pregnant women eat their food cravings they are not able to sleep or partake in any other activity for the day whereas some of them become nauseated until they have eaten their food cravings.

In as much as this study showed that most of the pregnant women had positive attitude towards their dietary practice, a considerable number of them had poor dietary practices. This means that, there could be other factors that affect the attitude of the pregnant women towards their dietary practices. According to Bianchi et al., (2016), pregnant women want to follow a diet “which is good for their child or them as a mother” and “which is good for them as a woman”, yet they lack the social support they need to do so.
5.5 Socio-Cultural Beliefs and Dietary Practices

The results of the study indicated that most of the respondents are aware of socio-cultural beliefs. To be sure of this, the socio-cultural beliefs were mixed with food beliefs to ascertain whether respondents could identify the socio-cultural beliefs. The results showed that about 70% of the respondents identified and disagreed to the socio-cultural beliefs in relation to their dietary practices. These socio-cultural beliefs were negative beliefs which showed that the pregnant women had considerable knowledge of what their socio-cultural beliefs were.

Other studies have shown that socio-cultural beliefs have greatly affected the dietary practices of pregnant women as the pregnant women would prefer to please their gods than to go contrary to the rules, norms and beliefs of their culture (Arzoaquoi et al., 2015; Ugwa, 2016). Arguably, this study also showed a strong negative correlation between socio-cultural beliefs and dietary practices. That is, the more the pregnant women believe and engage in their socio-cultural beliefs, the less likely they are to have good dietary practices. According to Arzoaquoi et al., (2015), food taboos are learnt from the broader community as there are food taboos governing children, women or ladies and not just pregnant women. This was confirmed in a study conducted by Ugwa, (2016), in Northwest Nigeria. In the Northwest part of Nigeria, pregnant women are banned from taking milk and green vegetables (Ugwa, 2016). Milk and green vegetables are also known to be rich sources of protein and vitamins that are essential for the health of the pregnant woman and the foetus (FAO, 2010). In the Northern part of Ghana, children and women are prohibited from eating enough meat and fish as it is believed that fish or meat belongs to the head of the family only (Arzoaquoi et al., 2015). Meat and fish are rich sources of protein that complement the energy requirement for children and women and prevents diseases such as kwashiorkor in children (FAO, 2010).

According to Arzoaquoi et al., (2015), food taboos are held in high esteem and pregnant women are expected to avoid certain foods that are very healthy and will provide good nutrients for
growth and development. It is these healthy foods that are banned for pregnant women to appease the gods of the land. Also, some pregnant women are forced to practice these beliefs out of obedience even though it may not be their culture but that of their husbands (Aliwo et al., 2019).

5.6 Association between Dietary Practices and Demographic Characteristics

Among other tests of association with the help of logistic regression, the study matched demographic characteristics such as age, level of education, employment status and trimester with the dietary practices. It was observed that, pregnant women who were employed were more likely to have good dietary practices as compared to those who were unemployed. Also, pregnant women who were in their second and third trimester were also more likely to engage in good dietary practices as compared to those in their first trimester. The findings support the work of Malek, (2015), who stated that pregnant women who were employed engaged in good dietary practices based on their monthly income.

In a study conducted by Forbes & Graham, (2018), most pregnant women in their second and third trimester eat more food and engage in good dietary practices due to the fact that the foetus in the womb is developing and there is a need for them to eat healthily. Another study also suggested that pregnant women in their second and third trimester get hungry easily and are required to eat healthily and engage in good dietary practices (Rosen et al., 2018). This implies that, as the pregnant woman gets closer to delivery, it is important for her to engage in good dietary practices to ensure that all the nutrient requirements are met to avoid complications during delivery.
5.7 Association between Socio-Demographics and Dietary Practices

The results of the study showed that, with the exception of age and marital status, the other demographic characteristics such as level of education, employment status, religious affiliation and trimester had a significant association with knowledge of dietary practices. That is, pregnant women who were educated and employed were likely to have good general knowledge about dietary practices. Other studies including Masuku & Lan, (2014), showed that level of education and employment status had a significant association with the knowledge of dietary practices among pregnant women.

According to Rosen et al., (2018), the religious affiliation of pregnant women also affected their dietary practices as some religions have certain religious beliefs concerning foods that should be eaten by pregnant women. Other religious organisations also have nutrition education for their members to ensure healthy living (Krzepota & Putek-Szelag, 2014).

5.8 Implications of Findings with Conceptual Framework

The findings of the study confirm the reported concepts in the conceptual framework that dietary practices can be influenced by several factors. The findings of the study showed that factors such as the demographic characteristics, socio-economic status and socio-cultural beliefs could affect the dietary practices of a pregnant woman. The conceptual framework also showed that knowledge of dietary practices and family size could affect the dietary practices of the pregnant woman as this was seen in the findings of the study.

The findings of the study also showed that pregnant women who engaged in poor dietary practices were those who consumed less of foods in the dark-green leafy vegetable food group and other food groups that provide the essential micronutrients needed for growth and development. The lack of these micronutrients led to dietary related conditions such as anaemia in pregnancy, gestational diabetes and obesity. Concerning trimester of pregnancy, pregnant
women in their second and third trimester were significantly associated with good dietary practices and the conceptual framework connotes that pregnant women are more likely to engage in good dietary practices due to the pregnancy.

The findings of the study also showed that the dietary practices that pregnant women engaged in affected their pregnancy outcomes. Those with good dietary practices are usually the healthy ones, who have safe deliveries and well-developed babies whereas those with poor dietary practices are more likely to have complications at birth.
CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This section presents the conclusion and recommendation of the study. Key conclusions are established in accordance with the objectives of the study. Recommendations are also offered to two main categories of stakeholders in the areas of (1) future researchers and (2) industry stakeholders.

6.1 Conclusion

The study revealed that there are several factors that influence the dietary practices of pregnant women who attend antenatal care visits at the University of Ghana Hospital and the Madina Polyclinic. The study showed that most of the pregnant women at these facilities had very good knowledge about their dietary practices and a positive attitude towards dietary practices. It is important to note that, the pregnant women in this study had very good general knowledge of dietary practices and a positive attitude toward their dietary practices, yet a considerable number of them engaged in poor dietary practices. However, the findings revealed that the socio-cultural beliefs of these pregnant women concerning what they eat during pregnancy affected their dietary practices. There was a statistically significant negative correlation between socio-cultural beliefs and dietary practices.

The study also showed that there was a significant association between employment status and trimester of the pregnancy with the dietary practices of the pregnant woman. There was also a significant association between level of education, employment status, religious affiliation and trimester of pregnancy with knowledge of dietary practices.

The findings established that quite a number of the pregnant women had difficulty eating during pregnancy, which affected their attitude towards dietary practices. This was also seen
in the dietary practices, as some of the food groups had very few pregnant women consuming foods from such food groups. These food groups are also the food groups that contain the essential micronutrients needed for the growth and development of the pregnant woman and the foetus.

6.2 Recommendations

On the basis of the study findings and the ardent need for a healthy diet during pregnancy, the following recommendations are made to future researchers and industry stakeholders. The stakeholders are government institutions in the health sector that have the mandate to provide quality healthcare and health services to pregnant women at the antenatal care unit. These stakeholders are the Ghana Health Service, the University of Ghana Hospital and the Madina Polyclinic.

6.2.1 The Ghana Health Service

As a measure to address the factors that influence the dietary practices among pregnant women, regular consultative meetings should be held. The regular consultative meetings should be held with traditional leaders to reduce the extent to which socio-cultural beliefs affect dietary practices. Nutrition education at the antenatal care unit should also be intensified in relation to food groups such as the dark-green leafy vegetables, other vegetables and fruits, pulses and meat, poultry and fish.

6.2.2 Healthcare Providers

Considering the crucial role that nutrition plays in the health of the pregnant mother and the baby, it is recommended that the health facilities liaise with the Ghana Health Services to provide quality healthcare and services. It is recommended that the health facilities should ensure that strict counselling is given to pregnant women on the effect that socio-cultural beliefs or food beliefs can have on their health. A nutrition officer should also be employed in
every health facility to give counselling to the pregnant women and ensure that the pregnant
women live healthy lives.

6.2.3 To Future Researchers

In a bid to address every aspect of maternal healthcare, it would be more prudent to expand the
objectives of their research to include household composition and its influence on dietary
practices, the role of the husbands during pregnancy and its influence on dietary practices.
Other laboratory investigations may also be conducted to determine whether the dietary
practices of pregnant women could lead to other health conditions such as hypertension, kidney
disease, cardiovascular disease and others apart from anaemia in pregnancy, which is obvious.
REFERENCES


APPENDICES

Appendix A: Research Questionnaire

I am Leonie Afi Allorsey, a Master’s degree student from the School of Public Health, University of Ghana, Legon conducting a study on the dietary practices among pregnant women at the University of Ghana Hospital and the Madina Polyclinic. Your participation in this study will help us identify some of the dietary practices that pregnant women indulge in and how safe it is for them. Your participation in this study is completely voluntary. We would also like to assure you that all information collected in the course of this study is strictly for academic purposes and will remain confidential. The codes on the questionnaire will only help us to identify the respondent in case any clarification is needed but your name will not appear on any document coming out of this study.

Thank you very much for your participation. In case you have any questions, please let us know. Or call on this number 0267162062.

Code Number ……………

DEMOGRAPHIC BACKGROUND

Section A: Socio-demographic Data

1. Age at last birthday ………………

2. Marital Status
   a) Single [ ]  b) Married [ ]  c) Co-Habiting [ ]  d) Divorced [ ]  e) Widowed [ ]

3. Highest level of education
   a) None [ ]  b) Primary [ ]  c) Junior high/middle school [ ]  d) Senior High/O-level/A-level [ ]  e) Tertiary [ ]

4. Religious Affiliation
   a) None [ ]  b) Christianity [ ]  c) Islamic [ ]  d) Traditionalist [ ]  e) Atheists [ ]

5. Which ethnic group do you belong to?
   a) Ga-Adangbe [ ]  b) Ewe [ ]  c) Akan [ ]  d) Dagbani [ ]  e) Others (Specify) ………………
6. What is your employment status?
   a) Employed [ ]   b) Self-employed [ ]   c) Unemployed [ ]

7. What is your occupation?
   a) Professional/Technical/Managerial   b) Clerical   c) Sales and services   d) Skilled manual   e) Unskilled manual   f) Agriculture

8. What is your monthly income?
   a) 50 – 199GHS [ ]   B) 200 – 499GHS [ ]   C) 500 – 999 GHS [ ]
   d) 1000 GHS and above [ ]

9. What is your family size?
   a) 2 – 4 [ ]   b) 5 – 7 [ ]   c) 8 or more [ ]

10. In which month of pregnancy did you begin antenatal visit?
    Please specify …………………

11. Which trimester are you in now?
    a) 1st Trimester [ ]   b) 2nd Trimester [ ]   c) 3rd Trimester [ ]

12. How many full-term pregnancies have you had before this one?
    Please specify………………………….
Please tick the box that applies to you

<table>
<thead>
<tr>
<th>KNOWLEDGE OF DIETARY PRACTICES</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Don’t Know</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<tr>
<td>13. Eating a balanced meal provides good nutrition for a pregnant woman.</td>
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<td>14. Eating a balanced meal helps the baby to develop well.</td>
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<td>15. Taking iron-folate supplements prevents the pregnant woman from anaemia.</td>
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<td>16. A healthy diet during pregnancy must contain all the food nutrients in their right proportion</td>
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<td>17. Carbohydrate rich-foods makes the pregnant woman and the baby stronger</td>
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<tr>
<th>ATTITUDES OF PREGNANT WOMEN</th>
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<tr>
<td>18. A pregnant woman must eat more food</td>
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<td>19. It is very difficult to eat during pregnancy</td>
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<td>20. A pregnant woman must eat when she feels like eating</td>
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<td>21. A pregnant woman must eat anything she craves for at anytime</td>
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<th>SOCIO-CULTURAL BELIEFS AND DIETARY PRACTICES</th>
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</table>
ASSESSING THE DIETARY PRACTICES OF PREGNANT WOMEN

33. 24HR DIETARY RECALL

Please fill the table below with a description of the foods you have eaten for the past three days.

<table>
<thead>
<tr>
<th>Time of day</th>
<th>Foods or beverage consumed</th>
<th>Quantity or amount consumed</th>
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</thead>
<tbody>
<tr>
<td>Day 1</td>
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<td>Day 2</td>
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<td>Day 3</td>
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Thank you for your time and participation! God bless you!

Appendix B: Information Sheet

**STUDY TITLE:** DIETARY PRACTICES AMONG PREGNANT WOMEN: A CROSS-SECTIONAL STUDY CONDUCTED AT THE UNIVERSITY OF GHANA HOSPITAL, LEGON AND THE MADINA POLYCLINIC.

**INTRODUCTION:** I am Leonie Afi Allorsey, a student at the University of Ghana School of Public Health offering MSc Applied Health Social Science. I am conducting a research on the topic “Dietary Practices Among Pregnant Women: A Cross-Sectional Study Conducted at the University of Ghana Hospital, Legon and the Madina Polyclinic” in partial fulfilment of the award of a Masters Degree. My contact details are as follows;

Address: P.O.BOX AC 147, ACCRA-CENTRAL

Mobile: 0267162062

E-mail: leonie.allorsey@gmail.com

Location: University of Ghana Campus

**BACKGROUND AND PURPOSE OF RESEARCH:** This research seeks to identify the factors that influence the dietary practices of among pregnant women and their choice of food. This is to help identify some of the causes of certain conditions like anaemia in pregnancy and maternal mortality in Ghana.

**NATURE OF RESEARCH:** This study is to identify factors that influence dietary practices among pregnant women and why they eat the foods they eat. This study will take place at the Maternal Unit of both the University of Ghana Hospital Legon and the Madina Polyclinic where three hundred and forty (340) pregnant women will be interviewed.

**PARTICIPANTS INVOLVEMENT:** Participants will be required to fill a short questionnaire, which will not take more than ten (10) minutes of their time. Participants who cannot read or write will be given the necessary aid where the questions will be interpreted in a local language they understand and their responses written for them. The questionnaire is designed in a friendly form though some of the questions may seem a bit unfriendly. Participants are reassured that their responses will not be used against them and it will be used solely for the purposes of the research.

**BENEFITS:** The study will help put measures in place to combat the issue of anaemia in pregnancy and also reduce the maternal mortality rate in Ghana. Participants may benefit
directly and indirectly from the study, as they will gain a better understanding of their dietary practices during pregnancy.

**COST:** In this study, no cost will be incurred since the study will be done when the pregnant women come for Antenatal Care.

**COMPENSATION:** Participants who partake in the study will be given a small token after the interview is completed as a form of appreciation.

**CONFIDENTIALITY:** Code numbers will be used for the participants and not their personal names and the data collected will be kept under lock and key and used solely for the purpose of research.

**VOLUNTARY PARTICIPATION/WITHDRAWAL:** Participation is voluntary and participants have the right to decline to participate and also withdraw from the study at any time without penalty and without having to give any reasons.

**OUTCOME AND FEEDBACK:** The data collected will be analyzed and interpreted for the purpose of the research. After which the data collected will be discarded a few months after the study is entirely completed. The results of the study will be published in journals and social media platforms to allow everyone the opportunity to know the finding and to be used as existing literature for future research.

**FUNDING INFORMATION:** The Principal Investigator solely funds this study.

**SHARING OF PARTICIPANTS INFORMATION/DATA:** Participants are reassured that the data collected will not be shared with any individual or organization and will be used solely for research purposes by the Principal Investigator.

**PROVISION OF INFORMATION & CONSENT FOR PARTICIPANTS:** A copy of the Information sheet and consent form will be given to you after it has been signed or thumb-printed to keep.

For further clarifications or questions, kindly contact the following:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Leonie Afi Allorsey</td>
<td>Prin. Investigator</td>
<td>0267162062, <a href="mailto:leonie.allorsey@gmail.com">leonie.allorsey@gmail.com</a></td>
</tr>
<tr>
<td>Dr. Phyllis Dako-Gyeke</td>
<td>Supervisor</td>
<td>GHS-ERC Administrator <a href="mailto:gyekenay@yahoo.com">gyekenay@yahoo.com</a></td>
</tr>
<tr>
<td>Ms. Hannah Frimpong</td>
<td>GHS-ERC Administrator</td>
<td>0243235225 <a href="mailto:Hannah.Frimpong@ghsmail.org">Hannah.Frimpong@ghsmail.org</a></td>
</tr>
</tbody>
</table>
Appendix C: Informed Consent Form

STUDY TITLE:

Dietary Practices Among Pregnant Women: A Cross-Sectional Study Conducted at the University of Ghana Hospital, Legon and the Madina Polyclinic.

PARTICIPANTS INFORMATION

I acknowledge that I have read or have had the purpose and contents of the participants’ Information Sheet read and satisfactorily explained to me in English/Ga/Twi. I fully understand the contents and any potential implications as well as my right to change my mind (thus, withdraw from the study) even after I have signed/thumb printed this form.

I voluntarily agree to be part of this research.

Respondent Name/Initials…………………………………………..

Signature/thumbprint/Mark……………………………… Date……………………………

INTERPRETERS’ STATEMENT

I interpreted the purpose and content of the participants’ Information Sheet to the aforenamed participant to the best of my ability in the Ga and Twi language to the proper understanding of the participant.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to her satisfaction.

Name of Interpreter …………………………

Signature of Interpreter …………………………..

Date…………………………

Contact Details …………………………………
STATEMENT OF WITNESS

I was present when the purpose and content of the Participants’ Information Sheet was read and explained satisfactorily to the participant in the Ga or Twi language.

I confirmed that she was given the opportunity to ask questions/seek clarifications and the same were duly answered to her satisfaction before voluntarily agreeing to be part of the research.

Name…………………………………………..

Signature/thumbprint/Mark………………………………. Date……………………………. 

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that, the details of this study at large have been thoroughly explained to the participant and all questions and clarifications raised were duly attended to.

Researcher Name……………………………………

Signature…………………………………………… Date…………………………..