UNIVERSITY OF CAPE COAST

EFFECT OF NUTRITIONAL KNOWLEDGE, SOCIO-ECONOMICS STATUS AND ENVIRONMENTAL RESOURCE ON DIETARY HABITS OF LACTATING MOTHERS IN AHANTA WEST IN THE WESTERN REGION

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BY

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Thesis submitted to the Department of Vocational and Technical Education of the Faculty of Science and Technical Education, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy Degree in Home Economics

OCTOBER, 2022

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …….. Date: …….

Name:……..

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's Signature: ……. Date: ……

Name……

ABSTRACT

The purpose of the study was to explain the dietary habit of lactating mothers in the Ahanta West Municipality of the Western region in terms of their knowledge, socio-economic status and environmental resources. The study used descriptive survey to investigate the dietary habits of lactating mothers. The target population consisted of all lactating mothers who visited the selected health facilities in the municipality for RCH services. The study used a multistage sampling procedure to obtain data from 345 lactating mothers who visited the selected facilities for services. A self-designed structure interview guide and inventory were used to collect data. For reliability of the instrument, a pilot test of the instrument was carried out among lactating mothers attending post-natal clinics in Sekondi-Takoradi metropolis. The findings revealed that lactating mothers have positive dietary habits and knowledge on diet. Again, the majority of the lactating mothers had below average level dietary habits. It was also discovered that there was a strong positive relationship between dietary knowledge, environmental resource and socioeconomic background and dietary habit of lactating mothers. Finally, greater part of the nursing mothers within the study area had moderate knowledge on their diet. It was recommended that Health practitioners, NGOs and other stakeholders should educate lactating mothers on the various diet necessary to improve the composition of their breastmilk to feed their infants. Again, the Municipal Health Directorate (MHD) should have a policy that would provide financial support to lactating mothers

KEYWORDS

Dietary Patterns

Dietary Habit

Knowledge on diet

Lactating Mothers

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DEDICATION

To my husband Mr. Kwadwo Tenkorang Wiafe.

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CHAPTER ONE

INTRODUCTION

Overview

The chapter discusses the study's background, its problem statement, the purpose of the study, the general and specific objectives, the research questions, and the significance of the study. Again, the study's delimitations and limitations are specified to clearly describe the scope of the research and potential drawbacks. The chapter concludes with an explanation of the keywords.

The balance between nutritional intake and its outlay in the process of health maintenance, reproduction and growth is considered as nutritional status (Goldberg, 2002). Failure in early physical growth, delay in behavioural, cognitive, and motor development, high rate of morbidity and mortality. Ransom and Elder (2003) asserted that enhanced maternal knowledge on infants feeding, choice of right food items and positive anthropometric outcomes of children is as a results of extensive child growth counselling programmes. Socioeconomic status as well as the food production in the environment influence food selection by the lactating mothers (Goldberg, 2002).

When babies breastfeed, they take in food their mothers eat. Thus, the dietary habit or pattern of lactating mothers is worth discussing because it influences child development. The child's growth and development are dependent on the dietary habit of the mother (Kavle & Landry, 2018).

This chapter provides a brief write up on habits among pregnant and lactating mothers, how it affects the wellbeing of mothers and the growth and

development of children below two years. The background to the study is also presented and it captures a concise understanding of dietary habits among pregnant and lactating mothers. Statement of the problem, study's purpose, objectives, research questions/hypothesis, significance of the study, limitation and delimitations of the study are also presented in this chapter.

Background to the Study

The most critical critical stage of every woman's life is during pregnancy when nutrients are needed in high amounts. The high demand for nutrients to provide energy in the form of new tissue and growth of existing maternal tissues such as breast and uterus and increased energy requirements for tissue synthesis makes pregnant women more vulnerable to malnutrition (Goldberg, 2002). As a result, mothers who are malnourished are likely to be exposed to vulnerable diseases, give birth to underweight children and experience more miscarriages (Ransom and Elder, 2003).

According to Lim et al., (2010), the 1.5 million mortalities in the world in the year 2010 resulted from lack of maternal nutrition. Black et al., (2008) opined that maternal undernutrition is evident in countries like South Africa, South-Eastern and South-Central Asia. Short and long term effects of infant's health is determined by maternal malnutrition during pregnancy. Poor infant development is linked to the risk of non-communicable diseases such as obesity, type 2 diabetes, and cardiovascular disease in later life (Koletzko et al., 2012). In Ghana, the commonest evidence of malnutrition in children around the weaning age of five is Kwashiorkor, where children show enlarged belly, stunted growth, red hairs and ricket legs because the mother's breast milk is deficient in vital nutrients (Trowell cited in Lim et al., 2010).

One of the complexities of giving birth after pregnancy is the formation of milk in the breasts called lactation. Pregnant women, therefore, transition to become lactating mothers. However, the development of mammary functions that produce milk occurs during pregnancy. Therefore, the period of pregnancy and lactation require high-energy food supplement to ensure women do not suffer high incidence of low birth weight in the infants (Ransom & Elder, 2003). Worldwide, lactating mothers are more susceptible to undernourishment compared to non-lactating mothers (Chen et al., 2012). Pregnant mothers are advised to consume daily iron and folate supplements; however, they should take additional micronutrients for at least three months, after childbirth due to the high nutritional demand for both mother and baby (Ransom and Elder, 2003). In developing countries, undernourishment exposes both mothers and infants to lots of diseases because of the compromised immune system, increased the risk of mental disorder, and death (Raymond et al, 2018). Lactating mothers should hence, surge their energy consumption by 25%, protein by 54%, and other nutrients. They Adopting healthy dietary practices including increased food diversity and receiving education on potential risks of eating nutrient deficient are important diets to attain an optimal nutritional status (Hu et, al, 2019, Yu et al, 2018).

Nutrient requirements during lactation hinge principally on the volume and composition of milk made by the mother and her initial nutrient requirements and nutritional status. The energy demand of lactating mothers exceeds pre-pregnancy demands by approximately 640 kcal/day during the first 6 months post-partum. The dietary choices must be selected to meet the nutritional requirement of both the mother and the baby.

Effective breastfeeding practices and modern feeding which is caused by passable maternal knowledge helps reduce not only malnutrition but also child death (PAHO/WHO, 2011; UNICEF, 2007). It aids to prevent the early introduction of modern foods that are of incorrect quantity or poor quality (WHO, 2002). Furthermore, mothers who have high knowledge about their nutrient intake are not likely to accept traditional beliefs that can negatively affect their nutritional status (Sunguya et al., 2013). This establishes the link between maternal education, nutritional awareness, and significant health outcomes.

Socio-economic status (SES) is a well-established term mostly used in dietary studies to explain the link that exist between itself and other variables such as health status (Galobarde, Lynch & Smith, 2007). Turrel and Kavanag, (2006) concurred by positing that income make room for other material and economic resources that influences quality of diets (i.e. making healthy food more accessible and affordable). The choice of socio-economic indicator often reflects which data are obtainable. Measures based upon education have been extensively used, because such information is the key socio-economic indicator confined in several national data sets (Galobarde, Lynch & Smith, 2007).

Food demand influences agricultural production. Marlow, Hayes, Soret, Carter, Schwab and Sabate (2009) stated that examples of these agricultural produce inputs include, water, pesticides and fertilizers. This was based on the assumption that larger amount of inputs is connected to greater milieu effect. Dietary preferences are thus influenced might likely be influenced by agricultural and commodity production. Dietary preference and

milieu factors influences diverse dietary patterns. Societal views about a person's preference as to what he/she decides to eat is determined by what produced in the environment (Marlow, Hayes, Soret, Carter, Schwab & Sabate, 2009).

Statement of the Problem

Ghana has not gone far in health care delivery especially for maternal health. The problem appears to come from Ghana's inability to achieve the Sustainable Development Goals (SDGs) 3 which sought to reduce global mortality ratio to less than 70 per 100,000 live birth births by 2030. The SDG 3 also sought to end preventable deaths of new-borns and children under 5 years of age. However, as at 2020, the maternal mortality ratio is still as high as 319 per 100,000 live births and the neonatal mortality rate is 29 per 1,000 live births in Ghana (Dankwah, 2020). This was disclosed by the health minister during a meeting between the Ministry of Health (MOH) and Japan International Cooperation Agency (JICA). It has been realized that Ghana failed to make key investments needed in the health sector, especially access to good quality care (Fenny et al., 2018). While health financing could not be met to provide both maternal and child care as required by the United Nations Millennium Declaration of 2000 to meet the goals, specific nutritional strategies such as preventing poor dietary habits could be used to curtail the challenges that followed afterwards. According to the annual report of the Ghana Health Service Western Region annual report in 2017, Ahanta West recorded a low point prevalence of underweight children, 0-59 months.

The benefits of breastfeeding to both infants and mothers are well established. However, the quality nutrition of both pregnant and lactating

mothers can have serious repercussions on both mother and baby. Three aspects of maternal nutrition appear to influence breast milk quality. These include current dietary intake, nutrient stores of the mother, and changes in the function of lactating hormones in the mother (Salone et al. 2013). The quality of maternal nutrition can influence the milk composition resulting in positive, neutral, or negative consequences to the nursing infant (Fenny et al., 2018). Issues like premature birth, maternal death, and stillbirth may be as a results of poor dietary practices.

Therefore, the maternal diet should be well planned to ensure an adequate nutrient supply. Ideal dietary guidelines for Lactating Women should include: (1) The intake of animal foods, such as fish, egg, meat, poultry, eggs, and seafood, is to be increased; (2) Drinking appropriate amounts of milk is the best food source for calcium supply; (3) Iron-rich foods are to be consumed more frequently; (4) Proper physical activity is required to maintain proper body weight; (5) No smoking, no irritating food are allowed (Chen et al., 2012). Upon these recommendations the impact of LM's nutritional status has been less investigated, but rather, the attention has been on impact of LM's on breast milk composition. The mother can only have a good nutritional status to impact positively in lactation and the infant's health. Good nutritional status is influence by the economic status of the family leading to specific dietary choices (Hundera et al., 2015). The research is anchored on identifying these dietary habits, the factors that influence the choice of these diets and assisting health authorities and policy makers to propose ways of alleviating it consequential effects such as lack of energy for delivery, low

birth weights and poor milk nutrient profile thereby saving both mother and child.

Purpose of the study

The purpose of the study was to examine the effect of nutritional knowledge, socio-economics status and environmental resource on dietary habits of lactating mothers in Ahanta West in the Western Region. Specific objectives of the study were to determine the:

1. dietary habits of lactating mothers in Ahanta West.
2. maternal knowledge on diet among lactating mothers in the study area.
3. environmental resources among lactating mothers in the study area.
4. socio-economic status of lactating mothers in the study area.
5. effect of knowledge on diet, socio-economic status and environmental resource on dietary habits of lactating mothers.

Research Questions

Based on the purpose of the study, the following research questions were formulated.

1. What is the dietary habit of lactating mothers in Ahanta West?
2. What is the level of maternal knowledge on diet among lactating mothers?
3. What are the environmental resources that exist in Ahanta West?
4. What is the socio-economic status of lactating mothers in the study area?
5. What is the effect of knowledge on diet, socio-economic status and environmental resource on dietary habits?

Significance of the Study

It is hoped that findings of this study will help health practitioners and policy makers to identify the dietary habits and factors that influence such habits of lactating mothers to be able to develop policies and strategies that will improve their dietary habits in the Ahanta West Municipality.

The study will also provide lactating mothers with adequate knowledge that will influence their dietary choices positively. It is expected that improved dietary choices will help. It reduces the effect that poor diets have on both pregnant and lactating mothers and their unborn and newly born will also reduce cases of stillbirths, premature birth, low birth weight, and overall maternal and infant mortality.

The findings will add to existing literature on dietary habit and lactating mothers. This is because only few researches have done in Ghana on the issue.

Delimitations

The study was delimited to lactating mothers who visited the selected Hospitals only. Again, only three hospitals were used because of proximity to the researcher. The study was also delimited to women with single foetus pregnancy since estimating the foetal weight of each foetal weight of twins is difficult.

Limitations

Some of the breastfeeding mothers were hesitant to participate in the study because they had previously spent a significant amount of time in the hospital. Again, the hospital was originally unwilling to enable data gathering,

but after more consideration, the institution agreed to participate in the data collection exercise. All of this adds to the length of the data collection process.

Definition of Terms

Socio-economic status (SES) is a well-organised term mostly used in dietary readings to explain the link that exist between itself and other variables such as health status (Galobarde et al., 2007).

Docosahexaenoic acid (DHA) is **an omega-3 fatty acid found in cold-water, fatty fish, such as salmon**. It is also found in fish oil supplements, along with eicosapentaenoic acid (EPA).

Deoxyribonucleic acid is a polymer composed of two polynucleotide chains that coil around each other to form a double helix carrying genetic instructions.

Flavin mononucleotide (FMN), or riboflavin-5′-phosphate, is a biomolecule produced from riboflavin (vitamin B2) by the enzyme riboflavin kinase and functions as the prosthetic group of various oxidoreductases, including NADH dehydrogenase, as well as cofactor in biological blue-light photo receptors.

Fetal alcohol spectrum disorders (FASDs) are a group of conditions that can occur in a person who was exposed to alcohol before birth. These effects can include physical problems and problems with behavior and learning.

Hyperaemia (also hyperemia) is the increase of blood flow to different tissues in the body.

Organization of the Study

This thesis structured into five chapters;

Chapter One covers the introduction which focuses on the background of the study, statement of the problem, purpose, objectives, research questions,

hypotheses of the study, significance, delimitations and limitations of the study. Chapter Two presents a review of related literature precisely conceptual and empirical review of related literature. Chapter Three covers the research methods, precisely research design, research instruments, sample and sampling procedures and data collection procedures. Chapter Four presents results and discussion. The last chapter of the study focuses on the summary, conclusions and recommendations and suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The Chapter presents the theory underpinning the study, key concepts as well as relevant related empirical works done in the field of study. The conceptual framework for the study was constructed based on the lessons learnt and knowledge gaps ascertained from the reviews are provided in the chapter.

Theoretical Framework

Information Processing Theory

According to George and Richard (1960), Information Processing Theory is a cognitive psychology framework that focuses on how individuals receive, perceive, store, and retrieve information. The theory suggests that the human mind functions like a computer, processing information through a series of stages. This framework is particularly relevant when studying cognitive development, learning, and problem-solving.

This theory posits that individuals make dietary choices based on the information available to them. In the case of lactating mothers, their knowledge of nutrition plays a crucial role in shaping their dietary habits. Mothers with higher nutrition knowledge are more likely to make informed choices about their diet during lactation, ensuring they meet the specific nutritional needs of themselves and their infants.

Health Belief Model

The Health Belief Model (HBM) is a theoretical framework developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels. The

model is designed to understand and predict health-related behaviors by examining the attitudes and beliefs of individuals (Becker, 1950). The central idea behind the Health Belief Model is that people are more likely to adopt healthy behaviors if they believe they are susceptible to a health problem, believe the problem has serious consequences, believe that taking a specific action would reduce their susceptibility or severity, and believe that the benefits of taking that action outweigh the costs.

This model suggests that an individual's health-related behavior is influenced by their beliefs about the severity of a health issue, their susceptibility to the issue, and the benefits and barriers to taking a specific action. Lactating mothers who understand the importance of a well-balanced diet for both their own health and the health of their infants are more likely to adopt healthy dietary habits.

Nutrition during Lactation

One of the most vital determinant of women's health, general wellness and successful long-term breastfeeding is nutrient intake (Black, et al, 2013). Human lactation which is a natural process offers diverse health benefits for infants and their mothers. Chen et al., (2012) reported that there is a link between maternal health and nutritional content of breast milk. Ding, et al (2020) asserted that breast milk has a lot of nutritional components (docosahexaenoic acid (DHA), most vitamins including vitamin B2, A and D (Black, et al, 2013), which most often is attributed to the nutrient intake of maternal diet (Ding, et al. 2020 & Gunderson, et al, 2010). Breastfeeding mothers require higher nutritional intake as compared to women who are not breastfeeding (Ongosi, 2010). It could therefore be said infants' perinatal

health links to maternal wellness. According to Ongosi (2010), elements that influence a baby's early health and will continue to influence their health into later life include the nutrients that infants acquire from breast milk as well as the mother's general physical and mental health while breastfeeding. Many biochemical and metabolic processes necessary for the growth of most organ systems, including the digestive, cardiovascular, pulmonary, immunological, endocrine, and nervous system, have been proven to be improved by the nutritional content of human breast milk (Ahumah, 2017 & Ongosi, 2010). These metabolic processes frequently continue long after nursing and are essential for sustaining the proper function and health of neonates, especially those who were prematurely born or had low birth weights.

Nutrient intake of the lactating mother

A healthy dietary intake promotes the endurance, tolerance, and self-assurance needed to breastfeed an infant, according to Stuebe et al. (2009). Thus, it's crucial to assist women in achieving healthy nutritional status in order to maximize breastfeeding, which necessitates taking their energy and food requirements into account. The nutritional needs are significantly higher during lactation than at any other point in a woman's reproductive life, according to Guesnet & Alessandri (2011). Women who are breastfeeding should consume more calories and nutrients than non-lactating women do. The demands are greater than during pregnancy because breast milk must offer enough of every nutrient needed for an infant's growth and development (Ongosi, 2010).

According to studies by Stuebe et al. (2009) and Schwarz et al. (2009), metabolic abnormalities during adolescence, especially those connected to

nutrition, cause irreversible physiologic changes. Stuebe, et al. (2009) and Schwarz, et al. (2009) added that diet is crucial during the prenatal (during pregnancy) and postnatal (just after delivery) phases. Therefore, a nursing woman's diet impacts not only the composition and production of milk but also the adult children's health. Trans fatty acids in maternal milk cause adult offspring to develop heart insulin resistance, according to a 2007 study by Silveira et al. Therefore, breastfeeding mothers' ingestion of trans fatty acids is a significant contributor to the development of long-term metabolic problems in their adult offspring, particularly those involving insulin.

Energy and nutrients can be obtained from a varied diets that include foods from each basic food group. According to Gunderson, et al (2010), some nutrients needs however are greater than others and they vary from pregnancy needs as they independently affect breast milk concentration and energy lactation is the most energy demanding phase of human reproduction. The energy cost of milk production in the first six months of exclusive breastfeeding increases women‘s daily energy needs by 30% or 1260 kJ/day above the pregnancy energy requirement (Stuebe, Rich-Edwards, Willett, Manson & Michels, 2005). Since the energy cost of lactating is thought to be comparable in both well-nourished and undernourished women, this is widely recognized. However, women in developing nations typically have insufficient energy reserves when they start nursing, which puts them at risk for negative nutritional effects. According to Gunderson et al. (2010), breastfeeding women’s’ daily energy consumption rises over the course of lactation. As a result, during breastfeeding, lactating mothers need to intensify their food routine. According to Gunderson et al. (2010), lactating women exhibit a high

degree of variation in their dietary intake, level of physical activity, and weight loss, demonstrating that even within the same environment, different women may employ different strategies. They also stated that women who enter lactation with low bodily fat stores and fail to make up for the extra energy required experience significant postpartum weight loss. This reduction suggests that women's capacity to manage energy stress during nursing as well as her eating habits have been affected.

Nutrients needed during lactation

Carbohydrates

Starch, sugar, and fibre were the top three dietary carbohydrate categories, according to Ongosi (2010). According to Ahumah (2017), many people believe that starches and sugars are fattening and should be avoided, that refined sugar frequently contributes to attention deficit disorder (ADD), and fibre should be consumed to prevent constipation. In lactation, carbohydrate intake is slightly increased over that recommended for pregnancy as posited by Guesnet & Alessandri (2011). Since lactose is milk's main carbohydrate and makes up about 40% of human milk, it has an extremely high lactose concentration. According to Guesnet and Alessandri (2011), human milk has more lactose than cow's milk, giving it a sweeter flavor. Carbohydrates are necessary to give the nursing mother the energy she needs during the breastfeeding phase, though. Carbohydrates must also be included in the diet, according to Stuebe, Rich-Edwards, Willett, Manson, and Michels (2005) and Stuebe, et al. (2009), in order to avoid using up body protein and to avoid ketosis.

Proteins

According to Stuebe, Rich-Edwards, Willett, Manson & Michels (2005) and Stuebe, et al (2009), protein is a nutrient that the body uses for a variety of purposes, including building blocks for body tissues like muscles, cartilage, and bones, as well as for enzymes, hormones, immune system components, other substance transporters, membrane-bound carriers, and regulators of numerous biochemical processes. Although it can be utilized for energy, the main purpose of dietary protein is to provide amino acids for biosynthesis (Ahumah, 2017). According to Ongosi (2010), it's crucial to consume enough protein throughout times of growth or when recovering from illness. Since protein serves a variety of purposes, including those related to cell growth, tissue repair, energy production, the maintenance of fluid and electrolyte balance, acid-base balance, and a robust immune system (Ahumah, 2017 & Ongosi), it is necessary to further increase protein intake requirements during lactation (2010).

Fats

Newborns cannot successfully control their body temperature without enough fat storage (Ahumah, 2017 & Ongosi, 2010). Ahumah (2017) and Ongosi (2010) said that it is important to pay closer attention to the type of fats consumed from late pregnancy to nursing. Guesnet & Alessandri (2011) explained that monosaturated fats are important, but polyunsaturated fats that particularly contain omega-3 fatty acid known as docosahexaenoic acid (DHA), are of greater importance. Although it seems like fat is the macronutrient that varies the most both within and between individuals, it is the primary source of energy in human milk (Schwarz, et al, 2009). According

to Guesnet and Alessandri (2011), a breastfeeding mother needs more DHA in particular since throughout pregnancy, the baby utilized a significant amount of it for the development of the central nervous system, as well as for brain and eye growth. (Schwarz, et al., 2009; Guesnet & Alessandri) Maternal intakes are directly reflected by the DHA content of breast milk (2011).

Micronutrients needed during lactation

Aside the major nutrients needed by the lactating mother, there are other nutrients needed in smaller quantity by the lactating mother. They take supplements for the major nutrients for the wellbeing of the mother and baby (Ahumah, 2017). These nutrients include calcium, iron, vitamins and water. For instance, according to Ongosi (2010), calcium is a crucial component of breast milk for the development of strong bones and teeth. In addition, some calcium appears to come from demineralization of the mother‘s bones and increased dietary calcium does not prevent this. This means that calcium supports strong bones formation. Stuebe, Rich-Edwards, Willett, Manson & Michels (2005) explained that iron is necessary for the maintenance of physical activity, the development of psychomotor skills, and infection resistance. When intake of bio-available iron falls short of needs or when substantial physiological or pathological losses of iron take place, it becomes deficient. Age, gender, physiological, pathological, and socioeconomic factors all have a significant impact on the prevalence of iron deficiency. Compared to pregnant women, breastfeeding women require less iron. This is due to the fact that iron is not a large component of breast milk and that iron losses are minimized because breastfeeding often suppresses menstruation for a few months. The nursing mother needs zinc to enhance the activity of about 20

different enzymes, which are chemicals that help biochemical reactions take place in the body (Schwarz, et al, 2009). It is helpful for development, immune system care, which improves resistance to and recovery from infectious disorders, preservation of taste and smell, and is required for DNA synthesis (Stuebe, et al, 2009).

Ding, et al (2020) and Gunderson, et al (2010) explained the importance of vitamins to the lactating mother. Gunderson, et al (2010) stated that vitamin A is necessary for immune system cell differentiation, maintaining the mucosal surfaces of the respiratory, digestive, and genitourinary tracts, and maintaining eye acuity. However, too much preformed vitamin A has teratogenic effects. According to estimates, plant foods account for more than 80% of vitamin A intake in Africa (Stuebe, Rich-Edwards, Willett, Manson & Michels, 2005). While vitamin A from plant sources, such orange and green leafy vegetables, is in the form of pro-vitamin and must be converted before absorption, vitamin A from animal foods, including dairy products, liver, and eggs, is preformed and the most bio-available dietary source. While riboflavin (vitamin B2) converts to flavin mononucleotide (FMN) and then flavin adenine dinucleotide (FAD) before these flavins form complexes with numerous flavoprotein dehydrogenases and oxidases, thiamine (vitamin B1) facilitates energy utilization. Its requirements are expressed in terms of energy intake, which vary depending on activity levels. The flavo co-enzymes FMN and FASD participate in metabolic pathways' oxidation-reduction reactions and the creation of energy via the respiratory chain. According to Stuebe, Rich-Edwards, Willett, Manson and Michels (2005), the symptoms of riboflavin deficiency include hyperaemia,

pharyngeal and oral mucous membrane oedema, cheilosis, angular stomatitis, glossitis, seborrheic dermatitis, and normochromic, normocytic bone marrow. Niacin (Vitamin B3) prevents chronic wasting disease, which has diarrhea brought on by inflammation of the intestinal mucous surfaces, dementia following mental changes such as insomnia and apathy preceding an overt encephalopathy, and erythematous dermatitis that is characteristically bilateral and symmetrical. Low-density lipoproteins are also protected by vitamin C from oxidation, and it may have a similar effect on blood (Ding, et al, 2020). Gunderson, et al (2010) cited that anaemia is a typical sign of vitamin C deficiency. Through chelation or just by keeping the iron in its reduced state, vitamin C aids in the absorption of soluble non-heme iron. Folate in diet and plasma may be stabilized by vitamin C's antioxidant capabilities. The groups most at risk for vitamin C deficiency are those with the lowest availability of fruits and vegetables (Ding, et al, 2020). Gunderson, et al (2010) stated that in general vitamin C status will reflect the regularity of the fruit and vegetable consumption but also socio-economic conditions, because intake is determined not just by availability, but also by cultural preferences and cost. To protect herself from dehydration, a lactating mother should drink plenty of fluids (Ding, et al, 2020). A sensible guideline is to drink a glass of water, milk or juice at each meal and each time an infant nurse.

One could draw the conclusion that particular eating habits are related to personal and household traits including education, race, ethnicity, and family size. Personal and family traits, however, may also have an informational or knowledge effect in addition to reflecting people's underlying interests and preferences. The most frequently used example is that people

with higher levels of education may be better able to learn, process, and retain information, leading to a higher stock of nutrition knowledge, which is then reflected in the selection of particular meals.

Maternal knowledge and child dietary patterns

During the first five years of a child's life, the mother is often the child's primary caretaker. Her understanding of nutrition and how it impacts the child's growth and development will play a major role in how she does that task. The International Conference on Nutrition has suggested that caregiver behaviors take more of a center stage due to their significance in creating an atmosphere that is conducive to children's nutritional outcomes (WHO, 1992). The global strategy on infant and young child nutrition (IYCN) emphasizes the idea that lack of knowledge about appropriate meals and feeding methods is frequently a bigger factor in malnutrition than access to food (WHO, 2002; 2003). According to research, children's nutritional results are correlated with mothers' increased nutritional awareness. According to a study by Chen and Li (2008), a mother's dietary awareness is a significant factor in determining the health of her children. A cross-sectional study carried out in India in 2003 discovered a substantial link between maternal education and an improvement in the nutritional status of young children (Halder & Kejriwal, 2016).

The child's growth is highly impacted by the mother's knowledge of the choices available from the various dietary categories and how to make them. Due to a lack of understanding about how to properly feed children, babies and young children are especially at risk of malnutrition in poor nations (WHO, 2003). According to research, mothers are aware of the best feeding techniques. Thus, maintaining a child's health requires only exclusive nursing,

continuous breastfeeding, and a timely transition to suitable complementary food.

The mother's nutritional understanding has a significant impact on feeding patterns. In order to increase mothers' knowledge about newborn feeding in terms of quantity, variety, and consistency of supplemental feeding, an observational study was conducted in India. The study's findings demonstrated that 86% of complementary feeding methods were sufficient in terms of quality, quantity, regularity, and consistency (Sethi et. al., 2003).

Giving new mothers culturally specialized nutrition instruction and advising them to eat a variety of native foods will help them make better nutritional choices. Research indicates that mothers will prepare enriched complementary foods if they are socially and culturally acceptable, hence increasing maternal understanding of feeding techniques will result in an increase in infants' growth and intake of nutritious foods (UNICEF, 2007). There is a significant positive relationship between maternal nutrition knowledge and the nutritional outcomes for children, according to (Alderman, 1990; Asenso-Okere et al., 1997; Armar-Klemesu, 2000; Appoh & Krekling, 2005). Studies by (Rue et al.; Webb & Block, 2003) and (Webb & Lapping, 2002; Glenwwe, 1999) also discovered a significant positive link between a mother’s knowledge of maternal practices and nutritional results of their children. However, a previous study by Walia & Gambhir (1975) revealed no connection between mother nutrition knowledge and beliefs and childhood malnutrition.

Environmental resource and dietary habit

The availability of required food is a significant issue that nutrition educators and public-health professionals must deal with in order to further improve diets.

Agriculture production is influenced by food demand and vice versa. Food demands of people, particularly breastfeeding women, are influenced by modern agricultural techniques in terms of agricultural production inputs such as pesticides and fertilizers, water, and energy utilized to create commodities (Pimentel & Pimentel, 2017).

According to Baroni, Cenci, Tettamanti and Berati (2007) and Pimentel and Pimentel (2017), the use of technologies intended to boost crop yield and commodity output has increased in modern agriculture. Since the 1940s, technological developments in mechanization, irrigation, fertilization, and chemical pest control have allowed for significant gains in agricultural productivity (Zilberman, Dunarm, MacDougal, Khanna, Brown & Castillo, 2002). Water resources, energy use, the use of chemical fertilizers, and the use of pesticides are some significant environmental issues that influence those dietary decisions. These factors have affected the production of food for consumption in Ghana.

As a result, the lactating mother in Ghana has limited varieties of food. In Ghana, lactating mother can choose from cereals and tubers. The dietary habit is influence by the foods available. Therefore, the commonest foods are fufu, rice, banku and konkonte for the lactating mother. Aside these food stuffs, only canned and manufactured foods are available. This implies that

lactating mothers in the rural areas resort to pure natural foods whiles those in the cities and towns resorted to canned and manufactured foods

Meeting maternal nutrient needs during lactation

The following have been suggested by Chen, Eastwood and Yen (2007) to ensure that maternal nutrient needs will be met during lactation:

1. Instead of using vitamin and mineral supplements, lactating mothers should be encouraged to get their nutrients from a well-balanced, diverse diet.
2. A clear plan should be in place for the health care of nursing mothers, one that includes food advice and a check for nutritional issues.
3. The following suggestions are made to help women with restrictive eating habits increase their nutrient intake: To consume at least 7533 kJ of energy per day, promote increased consumption of nutrient-rich foods. Promote the substitution of meals high in vitamins, minerals, and protein for those lower in nutritional value if the mother insists on drastically reducing food intake. It might be wise to suggest a well-balanced multivitamin-mineral supplement under specific circumstances.
4. Discourage using appetite suppressants and liquid diets for weight loss.
5. Encourage use of a regular dose of vitamin B12, such as 2.6 mg of a vitamin B12 supplement or particular plant foods that contain the vitamin. avoiding calcium-rich dairy items like milk, cheese, and other dairy foods.

6. Promote higher consumption of other dietary calcium sources that are suitable for your culture. It is advised to take 10 g of vitamin D supplements daily and to restrict exposure to ultraviolet light in addition to avoiding foods fortified with vitamin D, such as fortified milk or cereal.

Nutrient Concerns for Selected Groups of Lactating Women

However, the diet may be distinguished by nutrient densities that are higher or lower than the averages within specific age, income, and ethnic groups. According to age, race (white, black, and other), and income (above and below the poverty level), data from nationwide surveys are available for intake (NCHS, 1983; USDA, 1988). Such information might be helpful in identifying potential nutrient deficiencies in particular populations.

Therefore, extra effort should be made to guarantee that breastfeeding mothers in these groups have access to a diet high in nutrients. Women who follow restrictive eating habits will consume too little of several nutrients. It applies to people who avoid foods that are significant sources of nutrients, such as calcium-rich dairy products, milk fortified with vitamin D, animal products (for vitamin B12), or fruits and vegetables, as well as people whose total calorie and food intake is low (unless nutrient density is unusually high) (for folate and vitamin C). Beliefs about foods that nursing women shouldn't eat may influence dietary habits in some ethnic groups (Baumslag, 1986), although the impact of such beliefs on nutrient intake is not fully understood.

Food Guidance for Lactating mothers

Numerous local and federal organizations focused on maternal nutrition have created a number of food guides for nursing moms. The amount

of daily servings recommended from each of the food groups serves as an example of how varied the dietary advice offered in these guides is (Buxton, 2010). For instance, servings of milk should range from three to six per day, servings of bread and cereals should range from four to eight per day, and meals of foods high in protein should range from four to twelve ounces per day (Buxton, 2010). For instance, servings of milk should range from three to six per day, servings of bread and cereals should range from four to eight per day, and meals of foods high in protein should range from four to twelve ounces per day (Buxton, 2010).

Recommended numbers of servings during Lactation

According to Buxton, (2010), the foods chosen from each food group can have a significant impact on the overall nutritional density of the diet. Foods that are significant providers of the nutrients most likely to be in limited supply should be noted when offering dietary advice. Breisinger (2014) and Blossener and De Onis (2005) have recommended the following foods as the sources of nutrients for the lactating mother.

1. *Calcium:* milk, cheese, yogurt, fish with edible bones, calcium-fortified tofu, bok choy, broccoli, kale, collard, mustard, and turnip greens, as well as breads baked with milk.
2. *Zinc*: meat, poultry, seafood, eggs, seeds, legumes, yogurt, whole grains (bioavailability from this source is variable).
3. *Magnesium*: nuts, seeds, legumes, whole grains, green vegetables, scallops, and oysters (In general, this mineral is dispersed throughout diet as opposed to concentrated in a select few foods.)

4. *Vitamin* B_6: bananas, poultry, meat, fish, potatoes, sweet potatoes, spinach, prunes, watermelon, some legumes, fortified cereals, and nuts.
5. *Thiamine*: pork, fish, whole grains, organ meats, legumes, corn, peas, seeds, nuts, fortified cereal grain (widely distributed in foods).
6. *Folate*: leafy vegetables, fruit, liver, green beans, fortified cereals, legumes, and whole-grain cereals.

Recommendations for Clinical Practice

Breisinger (2014) and Blossener and De Onis (2005) have made the following recommendations with regard to dietary habit of lactating mothers:

1. Promote a diet for lactating mothers that includes plenty of fruits, vegetables, whole-grain breads and cereals, dairy products with plenty of calcium, and protein-rich foods including meats, fish, and legumes. The research does not support the recommendation that nursing mothers regularly take vitamin and mineral supplements.
2. Encourage the selection and consumption of more foods that are high in these nutrients if dietary evaluation indicates that one or more nutrients may be delivered in less than recommended amounts by a woman's diet.
3. Provide tailored diet counselling (recommended) or suggest nutrient supplementation for women whose eating habits result in a very low intake of one or more nutrients.

Socio-economic status and dietary habit

The well-established concept of socio-economic status (SES) is frequently used in dietary studies as an explanatory variable in the study of another dependent variable, such as health status (Larrea & Kawach, 2005;

Hulshof, Brussaard, Kruizinga, Telman, & Löwik, 2003). The definition and measurement of SES with respect to diet and health research has been critically examined in recent years (Turrell & Kavanagh (2006; Mishra, Ball, Arbuckle & Crawford,2002). In order to characterise SES, three variables have been used most often: occupation, education and income. The association between SES and diet has been shown to be influenced by a variety of socioeconomic factors, despite the fact that both variables assess the same notion (Vlismas, Stavrinos & Panagiotakos, 2009; Shi, Lien, Kumar & Holmboe-Ottesen (2005).

The influence of education on lifestyle behaviors (exercise, food), problem-solving skills, and beliefs is thought to be related to health outcomes (importance of preventive health behaviours) (Turrell & Kavanagh (2006; Mishra, Ball, Arbuckle & Crawford (2002). Additionally, education may aid in the development of advantageous psycho-social and economic abilities and may offer protection from negative effects (Hulshof, Brussaard, Kruizinga, Telman, & Löwik, 2003). Vlismas, Stavrinos & Panagiotakos (2009)

According to Ball, Crawford & Mishra (2006), the key benefits of education are that it is simple to measure in self-administered questionnaires and that educational questions typically receive high response rates because they may be answered by anyone, regardless of age or employment situation (Larrea & Kawachi, 2005). Hulshof, Brussaard, Kruizinga, Telman and Löwik (2003) and Ball, Crawford and Mishra (2006) argued that profession in advanced societies evaluates status, accountability, physical exercise, and work exposures (Ball, Crawford & Mishra, 2006). Occupation may also affect diet by creating environmental or social networks that can influence

behavioural health habits (Hulshof, Brussaard, Kruizinga, Telman & Löwik, 2003). he ability to afford better housing and nutrition, live in safer neighborhoods, and have more opportunities to engage in health-promoting behaviors are all made possible by more privileged employment levels (Mishra, Ball, Arbuckle & Crawford, 2002). This means the level of education and education of the lactating mother has the potential of influencing the dietary habit of the mother.

Income presumably reflects the availability of financial and material resources, which has an impact on dietary quality by affecting how accessible and economical healthy food is (Mishra, Ball, Arbuckle & Crawford, 2002). Studies on chronic disease mortality rates, food and nutrient intake, dietary patterns, and eating behavior, the association between SES and diet or disease has been examined. Disadvantaged groups appear to have dietary profiles that raise mortality and morbidity rates for chronic diseases. They also appear to not follow dietary recommendations for daily nutrient intakes and intakes, which raises the risk of developing chronic diseases (Shi, Lien, Kumar & Holmboe-Ottesen (2005; Larrea & Kawachi (2005. Income thus has become a major indicator of dietary habit of the lactating mother. This means the dietary that will be chosen by the mother largely depends on their income.

Malnutrition has immediate, underlying, and fundamental causes. Inadequate nutritional intake and the child's health status are the immediate culprits. Food insecurity, child care practices, the provision of health services, and the environment are some of the underlying factors. The fundamental causes are ideological, political, and economic institutions (UNICEF, 1990; Engle et al., 1999). These socio-economic factors that affect nutrition tend to

influence dietary habit because Shi, Lien, Kumar & Holmboe-Ottesen (2005) and Larrea and Kawachi (2005 found that there is positive correlation between dietary habit and nutrition. That is what the mother feeds or the foods the mother eats determine the nutrients that would be obtained. If the mother is malnourished, it means she has problem with dietary. The opposite is true for well-nourished mothers.

For a child's growth, health, and survival from conception through the second year of life, adequate nutrition is crucial (Isolauri et al., 2011). In low- and middle-income nations, poor care practices throughout the first 1000 days of life have been well-documented (LMICs). Within instance, for the first six months of life, 40% of newborns in LMICs are exclusively breastfed (Lauer et al., 2004). Additionally, it was discovered that in Kenya, almost one third of infants receive just breast milk for the first six months, while approximately 40% of children aged six to 23 months are fed in accordance with IYCN recommendations (PAHO, 2003; WHO, 2005).

Malnutrition in children is affected by a variety of factors, including inadequate baby feeding practices, access to health care, and poor water and environmental hygiene (Kimani-Murage et al., 2011). Urban poor people have been found to have high rates of undernutrition, with stunting occurring more than 40% of the time (Abuya et al., 2012). Numerous research in some poor nations have pinpointed elements associated with inadequate breastfeeding and supplemental feeding habits. These include maternal traits including age, marital status, occupation, level of education, and health literacy, as well as child traits like birth weight, delivery mode, and birth order (WHO/UNICEF, 2000).

Food shortage brought on by armed conflict can be a significant contributor to food insecurity and malnutrition. Civil violence can both originate and result from food and nutrition insecurity (Breisinger et al., 2014). Chronic malnutrition is becoming prevalent in conflict-affected nations on a global scale. Women and children suffer the most when food is limited due to wars and other types of conflict since much of the already scarce resource will be distributed to those who can fight or who can battle to gain the food. Due to instability and insecurity, conflicts lead national economies to shrink. Infants and children are more at risk of hunger due to rising food and nutrition insecurity. For instance, due to regional wars, nearly all of Gaza's population is in need of help, while roughly half of people in Yemen and Syria are experiencing extreme food insecurity (World Food Programme, 2010).

A major contributing factor to malnutrition is poverty. According to a World Bank estimate, half of all Africans live on less than $1.25 per day (World Bank, 2011). However, in regions that claim overall food security, there might be vulnerable populations as a result of enduring or escalating disparities in wealth, gender, and educational opportunity. Thus, the various costs of malnutrition can coexist with impressive economic progress and poverty reduction (Chen et al., 2007). Despite conflicting findings, poverty brought on by income disparities frequently causes malnutrition in women and children.

According to several studies, children who live in poverty do not always suffer malnutrition problems (Berggren & Wray, 2002). Some moms are able to successfully raise well-nourished children even in locations where poverty and child malnutrition are widespread. However, studies (Webb &

Lapping, 2002) indicate that attempts to eradicate poverty may not always result in a corresponding decline in malnutrition rates in developing countries.

Malnutrition is a result of several factors, not just conflict, poverty, and maternal conditions. Moreover, it is a result of uneven food distribution. Hunger and malnutrition are intolerable in a world with the knowledge and resources to put an end to this human calamity, according to a joint statement from the Food and Agricultural Organization (FAO) and World Health Organization (WHO) at the International Conference on Nutrition. We recognize that every person has a right to acquire food that is both safe and nutrient-dense. We understand that there is enough food for everyone on the planet (FAO, 1997). Therefore, inadequate or unequal distribution, ignorance, poor sanitation, and societal pressures could be to blame for food shortages that result in malnutrition.

Insufficient food security in households or communities, poor access to health and environmental services, and poor childcare habits and practices all contribute to this vicious cycle. These three underlying factors, which are frequently encapsulated as "food, health, and care," also have interactions and are supported by more fundamental causes related to the availability, management, and utilization of resources and capability in society.

Conflict, poverty, maternal conditions, and inequitable distribution of food leads to malnutrition. A joint International Conference on Nutrition by Food and Agricultural Organization (FAO) and WHO asserts that “hunger and malnutrition are intolerable in a world with the resources and knowledge to end this catastrophe. They emphasized on the right of individuals to nutritionally safe and good food. FAO, (1997) asserts that there is enough food

for all, globally. As per FAO, (1997) added that factors like, maternal conditions, poor sanitation, ignorance and inequitable distribution of food. Fundamental to this vicious cycle are household deficits in food security, inadequate access to health and milieu services etc. These three basic facets—often shortened as "food, health, and care"—also interact, and they too are buttressed by more basic causes linking to the amount, control, and use of resources and capacity in societies (Shi, Lien, Kumar & Holmboe-Ottesen, 2005)

According to Ball, Crawford and Mishra (2006); Turrell and Kavanagh (2006) and Mishra, Ball, Arbuckle & Crawford (2002), LM's strategies of energy intake is influenced by beliefs and practices of their culture. This is evident when there is a forty day postpartum period, that is, women are restricted by food, work, and practice seclusion. This period is expected to increase dietary intake and reduce energy expenditure since the woman's diet is closely monitored by family members and they do no work. The energy balance equation has two components, energy intake and energy expenditure. Cost of lactation is determined by amount of secreted and produced milk, energy content, and efficiency of dietary energy. There has been consensus about richness of maternal diet and how it affect breast milk. Though, several authors have revealed diverse nutritional intake that helps surge vitality in breast milk, they however added that nutritional inadequacies lessens the quality and quantity of breast milk (Hulshof, Brussaard, Kruizinga, Telman, & Löwik, 2003). Fat, protein, and carbohydrates forms the building blocks for physical form. They break and reassemble into fuel, which our body uses to support physical activity and basic functioning (Larrea & Kawachi, 2005).

Diet and Child Development and Growth

The abnormal physiological condition caused by imbalances in protein, energy, and diverse nutrients is known as malnutrition (DFID, 2009). It has a serious long-term effect on individuals when it happens during childhood. Malnutrition surges from six months upwards because the breast milk alone would provide a smaller amount of the nutrient needed. Based on these findings, several researchers concluded that the major cause of malnutrition during infancy are consistently infectious diseases, modern feeding practices, and poor breastfeeding (DFID, 2009; Kramer et al., 2001; WHO, 1997).

As per UNICEF (2010) malnutrition may manifest as undernourishment (undernutrition) or over nourishment (over nutrition) (Prüss-Üstün et al., 2005). According to WHO, (2017), lack of quality diet, energy (micronutrient- trace minerals and vitamins) results in undernourished. According to Radu abd Ciotaru (2007) stunting, rickets, underweight, wasting, and nutritional anaemia are the resulting consequences of malnutrition.

Countries with poor resources usually report high rate of malnutrition. Lartey, (2008), supported this assertion by attributing this to poor breastfeeding and complementary. UNICEF, (2004), revealed that in developing countries, about 32% of children were malnourished (Fotso et al., 2012). Such urban poverty is attendant with overcrowding and poor sanitary circumstances which act together to surge child undernourishment instigated by infectious diseases, leading to high child morbidity and mortality (Tim & Lush, 1995). The occurrence of stunting in such settings may be as high as 40% and over (Black et al., 2011).

There was a vital decline in childhood undernutrition, however, Africa saw the prevalence child malnutrition during the 1990's (Blossener & De Onis, 2005). In the Ghanaian context, NDPC and UNDP (2008) linked malnutrition to 40% of childhood deaths, annually. Recently, the Multiple Indicator Cluster Survey showed that about 11% of children under five years of age were underweight, 19% were stunted and 5% were wasted (GDHS, 2014). In Nigerian context, study findings revealed that 36% of the participant were moderately/severely undernourished. It was further revealed that cases of low birth weight, wasting and underweight, and stunning, that is, 14%, 14%, 23%, and 41% (Adegbusi & Sule, 2011). In the Kenyan context, it was reported that 7% of Kenyan children aged 5 years were wasted, 16% were underweight, and 35% were stunted (Kenya National Bureau of Statistics, 2009; ICF Macro, 2009). As per UNICEF (2012), over fifty-six million people under the age of five years in SSA were estimated to be stunted. (Kerac et al., 2011). Kerac et al., (2011), reported a high level of wasting (34%) among infants under six months.

Conversely, the other form of malnutrition is over nourishment that leads to obesity. Kuzwayo, (2008), asserted that over nourishment has now become a World Wide concern that leads to child overweight due to buildup of excess fat. WHO (2012), linked over nourishment to cause of global death. They added that this may manifest in the form of metabolic diseases, heart diseases, and hypertension. United Nation International Children's Emergency Fund (UNICEF), It was found that the global percentage of overweight children under five years old at 6.7% (World Bank, 2012; UNICEF, 2012; WHO, 2012). They added that, child overweight is high in low-income

countries. Currently, Africa is experiencing rapid increases in childhood obesity and overweight, with an estimated 7% of under-fives on the continent affected in 2011 (UNICEF/WHO/ World Bank, 2012).

According to PAHO (2011), child health, growth and development hinges on the provision of adequate nutrition (WHO, 2011). Several researchers added that, feeding practices should be looked at when ensuring nutritional adequacy (Saha et al., 2008; Bhutta et al., 2008; Black et al., 2003). UNICEF, (2012), concurred by positing that feeding practices is vital from conception to about two years (24 months) after birth. As per WHO (2011), absence of quality diet, future immune response, feeding practices, learning ability and productivity, and reproductive outcomes of a person can be seriously affected (PAHO, 2011). Also, WHO, (2002), opined that deficits in nutrition during early childhood might impair intellectual performance and reproductive outcome.

A study by UNICEF (2007), revealed that malnutrition in Africa is the leading determinants of child deaths (9.7 million annual) and disabilities (WHO, 2002). In SSA, it was found that malnutrition contribute to 60% of child death yearly (4 million) (UNICEF, 2008). Stroke, obesity, heart disease, and type-2 diabetes are problems associated poor eating habits (Nicklas & Hayes, 2008). The World Bank recommended for the need to design effective national programmes to combat malnutrition in children (World Bank, 2006).

Nutritional Status of Children

The use of nutritional intake in the processes of health maintenance, growth and reproduction. Health status and dietary intake are the interrelated determinants of nutritional status children. As per WHO (2010), nutritional

status is highly complex and largely individualized. Dietary assessment, laboratory tests, clinical indicator, and anthropometric measurement are used to evaluate nutritional status, (WHO, 2010). The variety, proportions, and combination of diverse drinks, foods, and nutrient in diet is referred as dietary pattern (Kahan & Kushner, 2016). Food milieu and eating habit of parents (particularly, mothers and also family characteristics) influences dietary pattern of children (Robinson et al., 2007; Vereecken et al., 2004). It was also found that socio-economic status and birth order influence food habit.

Developing foetus can be affected by maternal nutritional status and this might have a long term serious negative impact on the child (Marques et al., 2013). Undernutrition exposes the womb to a lot of risk which might lead to high risk of mortality (Nobili et al., 2008). Children's nutritional status is negatively affected by women's low status when they "tend to have weaker control over household resources, time constraints, less access to information and health services, poorer mental health, and lower self-esteem" (Smith et al., 2003).

Anthropometry

Anthropometry measures the deviation of physical dimensions and the gross composition of the human body at diverse age levels. It deals with the use of measurement such as height, weight, and skin fold measurement as indicators to assess nutritional status (Abraham et al., 1977). The WHO recommended growth indices are weight for age, arm circumference, height, and height for age (WHO, 2009; Jelliffe, 1966). As per Young and Susanne (2009), one major indicator of body wasting is mid-upper circumference (MUAC). They added that weight-for-age underestimates the pervasiveness of

malnutrition in a population. Wasantwisut et al., (2011) concurred that MUAC monitors the alteration of body fat and protein reserves.

Biochemical analyses and Clinical assessment

The qualitative analysis of blood, urine and other body fluid relevant in clinical diagnosis is known as biochemical analyses. However, physical examination of sign and symptoms which helps in identifying nutritional deficiencies is a determinant of clinical signs assessment. Hair colour, pallor skin, edema, pale palm surfaces among others are signs of malnutrition. The American Journal of Public Health in 1973 revealed no link between clinical signs and malnutrition.

Effects of Malnutrition on child growth and development

Malnutrition is implicated in infant and child morbidity and mortality, leading to an increased burden of disease, mental and motor development, and increased risk of obesity and metabolic diseases later in the life (WHO, 2009; Grantham-McGregor et al; 2007; Oddy et al., 2003).

In the Ghanaian context, Ghana Statistical Service, (2008) in their study, attributed half of child death to malnutrition. Studies in some rural districts of Ghana have shown that children with stunted growth or thinness-for-age are often held back by their parents from enrolling in school at the right age. They however, linked underdevelopment of a child's early life to poor academic performance (Buxton, 2010).

Empirical Review

A study by Ding, et al (2020) evaluated dietary and nutrient intakes in LMs from urban and rural areas in China using multi-stage sampling method and a sample size 954 participants were included in the final analysis. Mann-

Whitney U- test was used in the analysis of data. It was found that LMs nutritional status is associated with infants' growth, maternal wellbeing, and secretion of breast milk. They also reported that due to the influence of low nutritional knowledge, there is poor dietary nutrition among Chinese LMs. Study findings further revealed that consumption of staple foods were greater in rural than in the urban areas. The intake of macronutrient (fats, protein, and carbohydrates) was lower in rural than in the urban areas.

Ongosi (2010) also conducted a study to examine LMs (0-6 months postpartum) nutritional knowledge and diet adequacy in Nairobi using a cross-sectional survey with a sample size of 120 LMs. Convenience sampling technique was used in selecting participants for the study. Health status indicators, socio-economic and cultural factors were additionally investigated as interactive factors that could influence the nutrient intake and nutrition knowledge of the lactating women. Most of the LMs asserted that their energy intake ranges between 5040 – 10080 kJ/day which gives a mean score of 6975.5 kJ/day. They added that, the mean score of LMs was lower than the recommended 11340 KJ/day. Cereals was the highest consumption whilst dairy products and vitamin A fruits and vegetables. Ongosi (2010) reported that the assessment hunger exposed that forty-three households were with food, whereas seventy-seven of them were either at risk of hunger or hungry.

Kimwele, (2014) shown that most of the children (85%) had dietary diversity below the average recommendations by the WHO. The children having dietary diversity below the recommended was an indication that their mothers have low dietary habit which resulted in the dietary state of their children. The similarity in the result of this study, to that of Kimwele (2014),

might be attributed to the similarity in methodology such as the research design and data collection procedure. Conversely, Masresha et al., (2013) reported that, majority of children's (86%) dietary diversity was below that of the recommendation by WHO.

Ahumah (2017) compared infants feeding practices, dietary habit and nutritional knowledge of LMs using a cross-sectional survey, food-frequency questionnaires and a sample size of ninety-two (92%) LMs. In order to assess dietary intake of infants, samples of infant's saliva was taken. Study findings revealed that 54.4% of the LMs were well nourished, whist 45.6% had malnourished children though maternal mothers of well-nourished children were older than the mothers of malnourished children. It was further revealed that majority (38%) of the LMs of malnourished infants were single parents. Ahumah (2017) also found that mothers' knowledge of the six food groups relates with weight and height of the children. Ahumah (2017) suggested that, because mother's have little knowledge about nutrition of infants, they exhibit poor behaviours with regards to breastfeeding. Ngameni, Sajo-Nana & Adie (2011), concurred by asserting that low knowledge level among LMs lead poor breastfeeding behaviour.

However, Kimwele (2014), in his study averred that LMs had sufficient knowledge about their dietary intake which lead to accuracy and adequacy in diverse diet. He later opined that poor nutritional knowledge, and lack of food leads to malnutrition (WHO, 2003).

Zelalem et al. (2017) assesses the impact of nutrition decrease on pregnant women's knowledge and practice in Addis Abeba's Akaki Kality Sub-city. A before-and-after cross-sectional study was undertaken on 406

pregnant women in Addis Abeba's Akaki Kality Sub-city. Pregnant women's knowledge and practice of pregnancy-specific nutrition were tested before and after receiving education from certified ANC practitioners. SPSS 20 was used to manage the data. The paired t-test and 95% confidence interval were used to examine how pregnant women's nutrition knowledge and eating practices changed during their pregnancy. The response rate for this study was 96.3%. Health practitioners were the most prevalent source of nutrition information for pregnant women (59%). Pregnant women had a mean knowledge and practice score of 5.5 (SD 2) out of 9 and 6.2 (SD 2) out of 11 respectively. Following the intervention of a nutrition education program, the proportion of pregnant women with knowledge of proper nutrition during pregnancy increased from 53.9 (95% CI: 48.9, 58.8) to 97% (95% CI: 94.8, 98.5), while pregnancy-specific dietary practice increased from 46.8% (95% CI: 41.8, 51.7) to 83.7% (95% CI: 79.8, 87.2). The study concluded that nutrition education provided by health care practitioners during pregnancy could increase women's knowledge and practice during pregnancy. Thus, emphasis should be placed on promoting nutrition education at the ANC for pregnant women in order for them to receive credible and correct information from health experts.

Hundera, Gemede and Wirtu (2015) examine nutritional knowledge, an associated factor among lactating mothers. From January to June of 2014, an institution-based cross-sectional study was conducted. The questionnaire was pre-tested and organized for the study. All breastfeeding mothers who attended both health institutions during postnatal care and the EPI program had their socio-demographic data, nutritional awareness, and associated

factors collected. Descriptive statistics, binary and multiple logistic regression analysis were used to examine the relationship between nutritional awareness and socioeconomic and demographic characteristics. The study found that the majority of the women 260 (81.3%) were between the ages of 17 and 25, with 292 (91.3%) attending school. In addition, 185 (57.8%) of nursing moms had strong nutritional knowledge, while 135 (42.2%) of mothers had inadequate nutritional knowledge. Multiple logistic regression analysis revealed that family size (AOR=4.604, 95%CI=1.903-11.140), family income (AOR=0.250, 95%CI=0.100-0.623), and knowledge of foods were substantially associated with study participants' nutritional status. Lactating mothers' nutritional understanding fell short of national and international requirements. As a result, lactating mothers, their families, and communities are encouraged to get ongoing nutrition education in order to improve food intake and dietary understanding during lactation, hence improving the health and nutrition outcomes of nursing mothers and their children.

Tessema et al. (2020) assessed nutritional practice and its associated factors among lactating mothers. A cross-sectional community-based study approach was adopted. The study participants were chosen using a systematic selection technique from a list of households, and the qualitative inquiry was conducted using purposive sampling. A pre-tested structured questionnaire was used to interview 425 lactating women. The Statistical Package for Social Sciences version 23 was used to analyze the data. Thematic content analysis was utilized to analyze the qualitative data. The connection between nutritional behavior and independent variables was investigated using multiple logistic regression. Lactating mothers with good nutritional practice and

understanding were found to be 28.7% (95% CI: 24.9%, 33.5%) and 52.0% (95% CI: 47.1%, 57.6%), respectively. Again, mothers who worked for the government (AOR=6.0, 95% CI: 1.953, 18.485) and mothers who had strong nutritional knowledge (AOR=3.12, 95% CI: 1.832, 5.318) had statistically significant relationships with lactating mothers' dietary behaviors. The study revealed that lactating mothers' nutritional behaviors and awareness were lacking in the study area. The occupation and nutritional awareness of the mother were substantially related to nutritional practice. As a result, maternal nutritional education about a balanced diet, as well as prompt and regular dissemination of nutritional information, were advised.

Karcz et al. (2021) compare knowledge and opinions between medical staff and mothers who have ever breastfed a child. The study employed a diagnostic poll method and was mostly done electronically. A total of 1159 completed questionnaires were evaluated, with medical professionals accounting for 35.1% and non-medical moms accounting for 64.9%. The Chi-square test, logistic regression, and U Mann Whitney test were used for statistical computations (the level of significance was set at 0.05). The findings revealed that the respondents shown a high degree of knowledge and accurately assessed the questioned assertions. The duration of breastfeeding was discovered to be the most important factor influencing respondents' knowledge (p 0.05). In terms of medical personnel, parity (p 0.001) and using an exclusion diet while breastfeeding (p 0.001) had a substantial impact on the recommendation of prophylactic dietetic limitations to lactating women. It was concluded that, despite having reasonably good knowledge of maternal nutrition during the lactation period, both breastfeeding mothers and medical

staff are still convinced of the beneficial effect of preventive dietary restrictions, which affects further lactational counselling and lactational performance.

Iradukunda and Ngomi (2020) determine the level of knowledge, attitude and practices towards nutrition and influencing factors among pregnant and lactating women. A descriptive cross-sectional study was carried out at the Rwandan refugee camp of Kigeme, employing both quantitative and qualitative methodologies. The questionnaires were distributed to 220 randomly selected pregnant and lactating women, and four focus group discussions were held with pregnant and lactating women, as well as 14 community health workers, to determine nutrition knowledge, attitude, and practices among pregnant and lactating women (0 to 6 months post-partum). The data was analyzed using SPSS 20.0 and theme analysis. According to the findings, 53.6% of individuals had excellent knowledge, while 46.4% had moderate knowledge. The qualitative findings revealed that the participants had a good level of nutrition knowledge. In terms of mindset, 67.2% have a negative attitude, while 32.7% have a positive attitude; in terms of nutrition practice, 71.8% have a poor nutrition practice, while 28.2% have a good nutrition practice. Following a multivariate analysis, the variables independently related with nutrition practice were purchasing food in the market as a source of food (AOR=14.987; 95%CI=1.650-4.231; P=0.001) and attitude (AOR=18.896; 95%CI=2.674-10.537; P0.001). The study reveals that while the participants had a good level of nutrition knowledge, the majority of them have a negative attitude and poor nutrition behaviors. Poor nutrition attitudes are influenced by inadequate food sources and attitudes.

Using a lifetime occupational and educational history and a semi quantitative food frequency questionnaire (FFQ) and a sample size of obtained from 2,929 men and 2,767 women, Galobardes, Lynch and Smith (2007) assessed the functions of an individual's education and occupations and the synergy between SES indicators. Galobardes, Lynch and Smith (2007) linked low occupation to variations in dietary habits. Hjartaêker and Lund (1998) stated that higher socioeconomic status relate significantly with healthier diet. Their studies have findings similar to that of this study. Each of them showed a positive relationship between socioeconomic status of lactating mothers and their dietary habit.

Using a cross-sectional survey and a sample size of 6,008 men and 6,957 women aged 19 years and over, Hulshof, Brussaard, Kruizinga, Telman & Löwik (2003) examined the variations in dietary intake between adults with different SES. In the assessment of dietary intake, a two-day dietary record and SES was used based on certain demographic characteristics. In analyzing SES impact on dietary intake, one-way ANOVA was used. They reported that dietary intake of higher SES groups was relatively closer to the recommendations by the Netherlands Food and Nutrition council. Findings revealed that breakfast skipping and obesity was among individuals with low SES.

Mishra, Ball, Arbuckle and Crawford (2002) assessed dietary patterns of Australian men and women using factor analysis and a sample size of 6,680 adults within the ages 18-64 years. The pattern of dietary habit were assessed according to respondents SES. In measuring SES of respondents, employment was used as an indicator. They reported lower Socio-Economic Status with

females sticking to 'traditional vegetables', 'meat dishes' among others. They added that males with low SES consumed more of canned and protein food, tropical fruits while tjose with high SES normally ate breakfast cereals etc. The lactating mothers level of food consumption Mishra, et al (2002) were described as tradition. This is an indication that the food was local produce and that the food were available for consumption by the lactating mothers.

Turrell and Kavanagh (2006) investigated the link between dietary knowledge, education level and food purchasing behavior of respondents using a stratified two-stage cluster design with a sample size of 1,003 from residents of private dwellings. In measuring the dietary knowledge of respondents, a 20-item index was used whilst 16-item index was used in measuring. They reported that lactating mothers with low-income households were least likely to purchase foods that were comparatively high in fibre and low in fat, salt and sugar. This is a clear indication that the foods selected and consumed by the lactating mother were influenced largely by their income and not their knowledge on diet or what is available in the local market they can buy from other market once the money is there. They added that, the SES variations of respondents affected their dietary knowledge, diet, and food purchasing behaviour.

Hjartaêker and Lund (1998) examined the influence of SES and lifestyle on essential dietary aspect using a cross-sectional design with a sample size of 20,000 LMs with the ages 45-69 years. The study also explored the variations in dietary intake with respect to respondent's age. Study findings showed that dietary habits varied moderately with age. Young respondents reported more alcohol, meat, and toffee intake while the adults

reported high potato consumption. The asserted intake of potatoes, fruits, and vegetables was less than recommended in all age groups, how the reported fibre intake was close to the recommended level.

Chen et al (2012) conducted a study to determine the nutritional and dietary intake during the first ninety (90) days of lactation using a questionnaire and interview with a sample size of one-hundred and ninety-nine (199) LMs. With respect to lactating mothers, total calories consumed from carbohydrate and protein, carbohydrate, vitamin B1, C, zinc, folate, calcium, and fibre intake was lesser that the nutrient intake recommendation by Chinese, (2), the fat intake increased, (3) the protein intake exceeded the recommended level. Study findings revealed a higher dietary habit in some food and lower in some food as opposite to this study which generally found that lactating mothers have higher dietary habit. They segmented dietary into macro and micro nutrients and reported a higher dietary habit for one and lower for the other without indicating the overall dietary habit. This division of dietary habit might have accounted for the difference in the results.

Conceptual framework of the study

According to Chakon and Shackleton (2019), the effect of knowledge on the dietary habits of lactating mothers is significant, influencing food choices, nutritional intake, and overall well-being. When lactating mothers possess accurate and comprehensive knowledge about nutrition, it positively impacts various aspects of their dietary behaviors. Knowledge about the importance of a balanced diet helps lactating mothers achieve optimal nutrient intake. This balance is crucial for meeting the increased nutritional demands during the breastfeeding period.

Availability of environmental resources, such as proximity to markets and agricultural areas, impacts the access of lactating mothers to nutrient-rich foods. A conducive environment supports the availability of diverse and nutritious food options. A diverse environment with access to a variety of foods encourages dietary diversity. Lactating mothers in such environments are more likely to consume a range of nutrients necessary for breastfeeding (Sambo et al. 2022).

Socio-economic status was used as a measure of food security. The effect of food security on the dietary habits of lactating mothers is substantial, impacting various aspects of nutrition and overall well-being. Food security, which denotes consistent access to sufficient and nutritious food, plays a crucial role in shaping the dietary behaviors of lactating mothers. Food security contributes to the overall health of lactating mothers (Smith et al., 2022). Well-nourished mothers are better equipped to handle the demands of lactation, reducing the risk of nutritional deficiencies and related health issues. Addressing food security and enhancing knowledge on diet through education and support programs is essential for optimizing the dietary habits of lactating mothers. This comprehensive approach considers both the availability of resources and the empowerment of mothers with the knowledge needed to make informed nutritional choices.

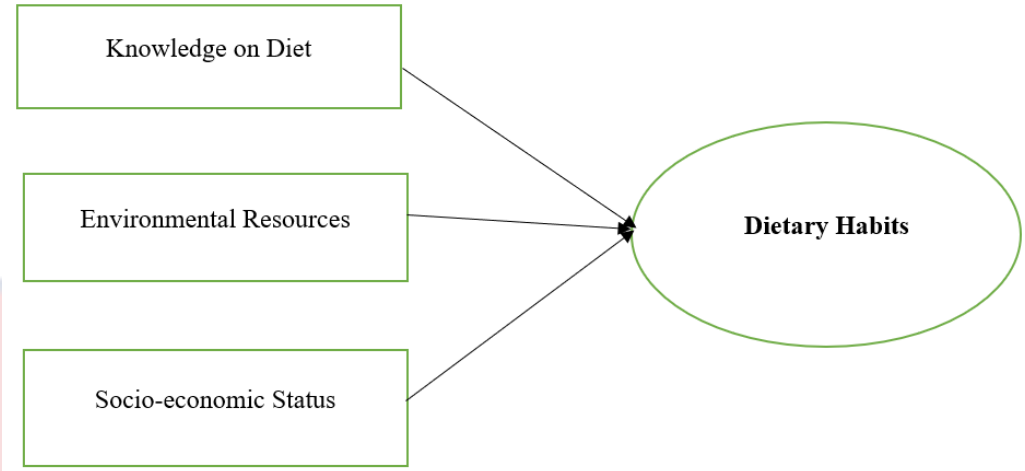

Figure 1: Conceptual Framework the effect of knowledge on diet, environmental resources and socio-economic status on dietary habits.
Source: Author construct

Chapter summary

In summary, literature showed that malnutrition has immediate, underlying, and fundamental causes. Inadequate nutritional intake and the child's health status are the immediate culprits. Food insecurity, child care practices, the provision of health services, and the environment are some of the underlying factors. The fundamental causes are ideological, political, and economic institutions. For a child's growth, health, and survival from conception through the second year of life, adequate nutrition is crucial (Isolauri et al., 2011). In low- and middle-income nations, poor care practices throughout the first 1000 days of life have been well-documented (LMICs). Within instance, for the first six months of life, 40% of newborns in LMICs are exclusively breastfed (Lauer et al., 2004). Additionally, it was discovered that in Kenya, almost one third of infants receive just breast milk for the first six months, while approximately 40% of children aged six to 23 months are fed in accordance with IYCN recommendations (PAHO, 2003; WHO, 2005).

The qualitative analysis of blood, urine and other body fluid relevant in clinical diagnosis is known as biochemical analyses. However, physical examination of sign and symptoms which helps in identifying nutritional deficiencies is a determinant of clinical signs assessment. Hair colour, pallor skin, edema, pale palm surfaces among others are signs of malnutrition. The American Journal of Public Health in 1973 revealed no link between clinical signs and malnutrition.

In the Ghanaian context, Ghana Statistical Service, (2008) in their study, attributed half of child death to malnutrition. Studies in some rural districts of Ghana have shown that children with stunted growth or thinness-for-age are often held back by their parents from enrolling in school at the right age. They however, linked underdevelopment of a child's early life to poor academic performance (Buxton, 2010).

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter looks at the various procedures and technique that were employed in conducting the research. The areas considered in the chapter are; the research design, study area, study population, sampling procedure, data collection and procedure. Data processing and analysis were also included in the chapter. The chapter ended with a chapter summary.

Research Paradigm

Philosophically, the paradigm for this research was the positivist paradigm. Research philosophy is a set of beliefs about how data on a phenomenon should be collected, analyzed, and utilized (Collis & Hussey, 2014). Organized procedure for combing rational judgement with exact empirical observations of people's behaviour to ascertain and confirm a set of probabilistic causal laws is known positivism knowledge (Neuman, 2007). In this study, the dietary habit of lactating mothers, child growth and development can be understood through the positivist realm. It is credited to the fact that reality is based on personal sentiments, ideas, and thoughts. As per Ulin, Robinson, and Tolley (2004) one of the research goals is to develop firm procedures potential for the approximation of reality.

The positivist research paradigm underpins the quantitative methodology. The positivist paradigm comprises of the ontology and empirist epistemology which requires an unbiased methodology (i.e. variables measurement and hypotheses testing associated to explanations of causal relations) (Sarantakos, 2012; Marczyk, DeMatteo & Festinger, 2005). In order

to present data in numerical forms, attention is paid to the gathering of complex quantitative data (Sarantakos, 2012; Neuman, 2003). A Quantitative research method was used because important questions that characterized the information collection could be analyzed numerically, and the results presented statistically, with tables and graphs.

With respect to methodology, verification and replication of observable findings, manipulation of variables, and applicability of statistical analysis are ways of achieving truth in the positivist domain (Guba & Lincoln, 2005; Kim & Lee, 2003; Bryman, 1998). Therefore, positivists emphasise the use of valid and reliable methods to describe and explain events. This affirms the fact that in describing and explaning events, positivists adopt reliable and valid procedures (Green & Thorogood, 2018; Reinharz, 2017; Sekaran & Bougie, 2016).

Research Design

The effect of nutritional knowledge, socio-economics status and environmental resource on dietary habits of lactating mothers in Ahanta West in the Western Region was investigated using a cross-sectional survey. A cross-sectional survey design was used to ascertain the status of the variables of the study and their inter-relationships. This is because data was collected at one point in time to determine the extent and determinants of crop diversification. According to Babbie (1995) and Creswell (2011), survey design helps the researcher to generalise to a larger population from a sample to make room for inferences about the characteristics of the population. Another reason for adopting this design is that it is economical and facilitates easy and quick collection and analysis of data (Babbie, 1995; Fowler, 2002).

Area

Ahanta West Municipal District is one of fourteen districts in Ghana's Western Region. Originally established as an ordinary district assembly in 1988 as Ahanta West District from the former Sekondi Takoradi Metropolitan Authority Council, it was later elevated to municipal district assembly status on 15 March 2018 to become Ahanta West Municipal District. The municipality is located in the southeast corner of Western Region, and its major city is Agona Nkwanta.

Agricultural production employs over 65% of the active population. Other economic activities include trading, agricultural processing (mostly oil palm, cassava, and rubber), and other trades such as hairdressing, dressmaking, carpentry, block-making, auto electricians, fitting, car-body spraying, refrigeration technicians or repairers, and others.

The major staple food crops produced in the district include cassava, plantain, maize, yam, rice and vegetables. Food crop production is generally on subsistence level with output per yield substantially low in the district due to traditional methods of farming with an average farm size of one acre per farmer (Buaben, 2016).

The study was conducted in the Ahanta – West Municipality, precisely Agona Nkwanta clinic and the district hospital at Dixcove, a coastal town. There are few health centres in the towns with quite a number of Community Health Planning and Services (CHPS) in the smaller towns and villages. Farming activities are mainly rubber plantation. Commerce is popular in the municipality with Agona Nkwanta market as one of the biggest in the region. There are number of bankers, teachers, nurses, and other sedentary workers.

With the exception of Agona Nkwanta which is quite cosmopolitan, the other towns are native and low economic and educational background.

Population

The accessible population for this study comprised all lactating mothers in Ahanta West municipality of the Western Region. The hospitals were Dixcove Hospital, Agona Nkwanta clinic, Abura health centre, Apowa health centre, Ewusiejoe health centre and Fasin health centre. The target population consisted of all lactating mothers who visited the selected health facilities in the municipality for RCH services.

Sample and Sampling Procedure

A purposive sampling sample was used to select Dixcove, Fasin, Agona Nkwanta, Ewusidjoe, Apowa and Abura health facilities because they are facilities with midwives who attend to delivery in the municipality. The researcher had records of lactating mothers in the municipality. Also, these facilities comparatively have resource Reproductive and Child Health (RCH) units for providing babies weighing services and recording of growth of babies could be obtained. A purposive sample is a non-representative subset of some larger population, and is constructed to serve a very specific need or purpose (Sarantakos, 2000). Adjei and Tagoe (2009) also stated that a purposive sample is used in situations where a specific target is to be reached. That is when respondents are expected to meet the criteria for being in the sample.

Simple random sampling technique was used to select Dixcove, Agona Nkwanta and Abura health facilities out of the six health centres in the Municipality which had midwives. This was because all the six health facilities purposively selected have midwives and RCH unit where the

required data could be obtained. According to Adjei and Tagoe (2009), the term random has a very precise meaning**.** Each individual in the population of interest is given equal opportunity to be selected during the selection (Amedahe, 2002).

Again, census was used to select 345 lactating mothers who visited the selected facilities for services (Dixcove = 101, Agona Nkwanta = 147 and Abura = 97). In all, an estimated sample size of 354 lactating mothers was selected for the study.

Data Collection Instrument

The instruments that were used to collect data were a structure interview schedule. A Yes/ No was used to elicit information from the lactating mothers because of the limited time spent at the unit and because some of a clients may not be able to read. Alshenqeeti (2014) described interview as the dialogue between an interviewer and interviewee whose core purpose is to gather data about "life-world" of the interviewee. As per Schostak (2009), an interview is an extendable conversation that aims at having a detailed information about a particular topic. Research has identified four types of interview that has been employed in social sciences.

The structure interview schedule was of four sections. The first section focused on the bio-data of the participant. The second section also looked at the maternal knowledge on diet and dietary habit and the third and fourth sections accessed information on environmental resources and the socio-economic status of the lactating mothers respectively The Japanese 24hour dietary intake was adapted and used to collect data on the dietary intake of the lactating mothers. The Japanese 24hour dietary intake is an open-ended

interview guide that measures peoples' dietary intake over a 24hour period. The items on the open-ended interview guide were translated to a close-ended (Yes/No) interview guide. This was to make it easy to quantity the dietary habit of the lactating mothers. It also made it possible to administer the instrument to a large sample. The inventory data was on child development. Information regarding the children development, such as weight was obtained from all the weighing cards of the mothers.

Validity and Reliability of the Instruments

Borg and Gall (2009) described validity as the extent to which a test measures what it intends to measure. To ensure the instruments' validity, the researcher consulted the supervisor, experts from the University of Cape Coast measurement and evaluation department to ensure the instrument's content validity; these experts read the questionnaire and helped made changes. Also, to ensure the content relatedness, the questionnaire was evaluated by my supervisor in the Department of Vocational and Technical Education for face validity.

Borg and Gall (2009) define reliability as the consistency level that the instrument demonstrates in whatever it is measuring. It shows that a questionnaire's reliability can yield the same results when filled out by concurring people in identical environments. Internal consistency allows the reliability of the measure itself. To test the reliability of the study, items in the questionnaire were analysed using the Cronbach alpha. The instrument was pilot tested and analysed to give a reliability coefficient of 0.868 which was considered strong and appropriate for the study. Also, a pilot-test of the

instrument was carried out using lactating mothers who attended post-natal clinics in Sekondi-Takoradi Metropolis.

Ethical Considerations

In the view of McNabb (2004) the four stages in research ethics are planning, data gathering, processing and interpretation of data as well as the dissemination of results. Hence, the lactating mothers' responses to the questionnaire were confidential. Privacy and anonymity of all participants were also ensured (Maree, 2007). The discussions of the findings were based on the trends that emerged from the data and not from any preconceived ideas.

Data Collection Procedure

With an introduction letter from the Department of Vocational and Technical Education, Faculty of Science and Technology Education of the University of Cape Coast, I sought permission from the heads of the selected health facilities and those in-Charge of the maternity and RCH that were used for the study. Consent was sought from the lactating mothers prior to participating in the study. Respondents were assured of confidentiality and anonymity of the data collected from them.

The data collection was done by the researcher as the lactating mothers showed up for post-natal clinic. Weight of the babies as recorded in the weighing cards were taken and recorded after they completed the interview. Two trained assistants helped the researcher to collect the data. Each facility was visited once for data collection and it was completed within a month.

Data Processing and Analysis

The data was sorted, coded and cleaned. Demographic characteristics were analysed and presented as percentages and frequencies. Data on research

question 1, 2 and 3 were analysed using Means and Standard Deviations. Since these research questions sought to describe a phenomenon in each case. Data on research hypotheses 1, 2 and 3 were analysed using Pearson Moment correlation coefficient. Since each hypothesis sought to find out the relationship between two variables which are continuous in nature. Data on research hypotheses 4 and 5 was analysed using regression because the hypotheses sought to find out the effect one variable has on other variables which were continuous in nature.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents results and discussion of findings from the study. The data collected was analysed and discussed according to the research questions and hypotheses. The data collected was analysed using means, standard deviations, correlation and simple regression. Study findings are presented in eight sections as per the research questions and hypotheses.

Analysis of Bio-data

The study was carried out in the Ahanta west Municipality on 345 lactating mothers who visited the selected facilities. The distribution of the respondents by age and educational level is shown in Table 1.

Table 1: Distribution of participant by age and educational level

Demographics	Frequency	Percentage
Age	23	6.67
< 20 years	54	15.67
20 – 25 years	89	25.80
26 – 30 years	119	34.50
31 – 35 years	48	13.91
36 – 40 years	12	3.48
Educational level		
None	31	8.99
Basic School	143	41.45
Senior High School	98	28.41
Tertiary	73	21.16

Source: Asiedu Agyekum, 2021

Table 1 shows results on lactating mothers ages and educational levels. The result show that majority (119, 34.50%) of the lactating mothers studied were between the ages of 31 – 35 years. This implies that majority of the mothers were in their active years and would be concerned about their diet.

Regarding educational level, the results show that majority (143 representing 41.45%) of the respondent had basic education. Additional 49.57% had educational levels above basic education making majority of the respondent individuals read, write and could have some knowledge in dietary habits of lactating mothers.

Research Question One

Research question one sought to find out the dietary habits of lactating mothers in the Ahanta West Municipal. Data was collected from those lactating mothers who visited the selected health facilities for post-natal services. The Japanese 24-hour dietary intake was adopted for the study. Responses from the 16 items interview guide was coded into Yes/ No. For example, those who indicated they ate in the morning were coded yes for eating in the morning and otherwise if no. The results of the dietary habits of the lactating mothers are presented in Table 2.

Table 2-Descriptive Statistics of Dietary Habits of Lactating Mothers

Dietary habits of lactating mothers	Frequency (%) Yes	Frequency (%) No
I always eat in the morning.	100 (29.0)	245 (71.0)
I always take breakfast.	92 (26.7)	253 (73.3)
I take food supplements.	310 (89.9)	35 (10.1)
I eat once a day.	31 (9.0)	314 (91.0)
I eat twice a day.	169 (49.0)	176 (51.0)
I eat three times a day.	30 (8.7)	315 (91.3)
I regularly drink water.	21 (6.1)	324 (93.9)
I eat more than three 3times a day.	121 (35.1)	224 (64.9)
I do not drink water regularly.	17 (4.9)	328 (95.1)
I take mineral supplement.	300 (87.0)	45 (13.0)
I like eating fast food.	72 (20.9)	273 (79.1)
I always eat vegetables.	318 (92.2)	27 (7.8)
I eat fruits regularly.	136 (39.4)	209 (60.6)
I am on diet.	57 (16.5)	288 (83.5)
I snack on foods like fan milk or yogurt, popcorn, or fruit.	280 (81.2)	65 (18.8)
My staple food provide all the energy and benefits to my unborn child.	314 (91.0)	31 (9.0)

Source: Asiedu Agyekum (2021)

Table 2 shows the results of the lactating mother's dietary habits. The results show that generally, the lactating mothers responded Yes indicating agreement to the statements on dietary habits while No indicating otherwise. According to the data collected, 318 (92.2%) of the nursing mothers agreed that they always consume vegetables, whereas 27 (7.8%) disagreed. Again, majority of the lactating mothers pointed out that they take food supplements to strengthen their immunity representing 310 (89.9%) while 35 (10.1%) said otherwise. Again, with regular intake of water, minority representing 21 (6.2 %) of the lactating mothers agreed that they take in water regularly while

majority representing 324 (93.9 %) pointed out that they do not take in water on regular basis. Regarding eating patterns, 169(49%) said they ate twice a day, 176 (51%) said they ate differently, and 315 (91.3%) said they ate three times a day. However, on the average majority of the respondents responded No to the most of the items in the Table 2.

The Average level of Dietary Habits of Lactating Mothers in the Ahanta West Municipal

Figure 1 presents result on the average level of dietary habits of lactating mothers in the study area. The results from the field revealed that the majority of the lactating mothers representing 58 percent had dietary habits below the average level while the minority of the lactating mothers representing 42 percent had dietary habits above average level. This is a clear indication that the majority of the respondents had dietary habits below the average level.

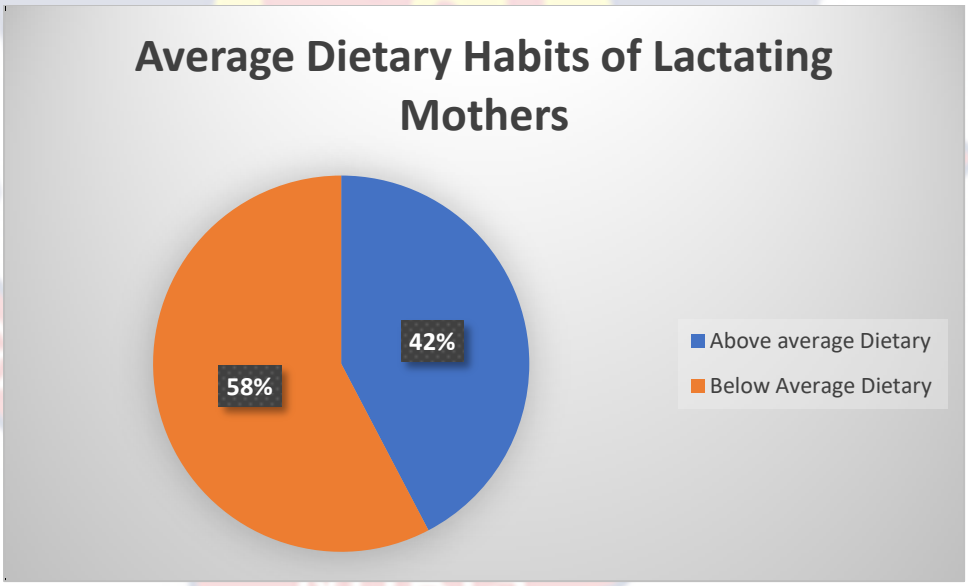

Figure 2: Average Dietary Habits of Lactating Mothers
Source: Asiedu Agyekum, (2021)

Association between average levels of dietary habits and dietary habits of lactating mothers

The chi square analyses were used to evaluate the differences that exist among lactating mothers in terms of the average level of dietary habits and dietary habits. Table 3 presents the cross-tabulations of the average level of dietary habits and dietary habits of lactating mothers. The table presents the Chi-square test of independence. The test of association indicated that there is an association between the average level of dietary habits and taking of food supplements by lactating mothers, regular drinking of water among lactating mothers as well as eating twice a day by lactating mothers. Again, majority of the variables under the dietary habits of lactating mothers had an association between average levels of dietary habits

Table 3: Chi-Square test of association between average levels of dietary habits and dietary habits of lactating mother

Variables	Below Average Knowledge	Above Average Knowledge	Total	X^2	Sig.
I always eat in the morning.					
No	111	134	245	3.090	0.079
Yes	35	65	100		
I always take breakfast					
No	115	138	253	3.822	0.051
Yes	31	61	92		
I take food supplements					
No	35	0	35	53.092	0.000
Yes	111	199	310		
I eat once a day					
No	146	168	314	24.989	0.000
Yes	0	31	31		
I eat twice a day					
No	108	68	176	53.386	0.000
Yes	38	131	169		
I eat three times a day					
No	146	169	315	24.106	0.000
Yes	0	30	30		
I regularly drink water					

No	146	178	324	16.406	0.000
Yes	0	21	21		
I eat more than three 3times a day					
No	125	99	224	47.577	0.000
Yes	21	100	121		
I do not drink water regularly					
No	146	182	328	13.119	0.000
Yes	0	17	17		
I take mineral supplement					
No	35	10	45	26.656	0.000
Yes	111	189	300		
I like eating fast food					
No	139	134	273	39.606	0.000
Yes	7	65	72		
I always eat vegetables					
No	139	179	318	3.225	0.073
Yes	7	20	27		
I eat fruits regularly					
No	80	129	209	3.547	0.060
Yes	66	70	136		
I am on diet.					
No	146	142	288	50.096	0.000
Yes	0	57	57		
I snack on foods like fan milk or yogurt, popcorn, or fruit					
No	38	27	65	8.550	0.003
Yes	108	172	280		
My staple food provides all the energy and benefits to my unborn child					
No	31	0	31	46.425	0.000
Yes	115	199	314		

Source: Asiedu Agyekum, (2021)

Research question two

The research question sought to find out the level of nutritional knowledge level of lactating mothers. An interview guide with yes/No options were administered to the lactating mothers at the selected facilities. A list of items that measures the knowledge level of these lactating mothers was presented to respondents to indicate Yes/No to the statements. The result of

the level of nutritional knowledge of the lactating mothers are presented in Table 4.

Table 4- Dietary knowledge of lactating mothers

Lactating mothers' knowledge on diet	Frequency (%) Yes	Frequency (%) No
I seek out nutrition information.	99 (28.7)	246 (71.3)
Lactating mother's diet affect the growth of the child.	338 (98)	7 (2.0)
Babies are vulnerable to diet diseases.	315 (91.3)	30 (8.7)
There are foods that should not be eaten during breastfeeding.	224 (64.9)	121 (35.1)
Drinking of water is important during breastfeeding.	315 (91.3)	30 (8.7)
The food you eat affects the taste and smell of the breast milk.	88 (25.5)	257 (74.5)
The type of food you eat affects the amount of breast milk.	108 (31.3)	237 (68.7)
It is good to take more vitamins during breastfeeding.	318 (92.2)	27 (7.8)
It is good to take more energy giving food during breastfeeding.	319 (92.5)	26 (7.5)
It is good to take more minerals during breastfeeding.	308 (89.3)	37 (10.7)
It is good to take more fat during breastfeeding.	57 (16.5)	288 (83.5)
Vitamins and minerals cannot be made by the human body and must be obtained from the diet.	338 (98.0)	7 (2.0)
Vitamins and minerals are essential for growth of children.	313 (90.7)	32 (9.3)
Vitamins provide energy.	101 (29.3)	244 (70.7)
Most vitamins and minerals are lost during cooking of food.	217 (62.9)	128 (37.1)
Fortified maize meal is a very good source of vitamins and minerals.	320 (92.8)	25 (7.2)
Most vitamins are not stored in the body and must be taken daily.	318 (92.2)	27 (7.8)
Minerals help to build strong bones and teeth.	317 (91.9)	28 (8.1)
Fruits and vegetables are the best sources of vitamins and minerals.	303 (87.8)	42 (12.2)
Vitamins losses from fruits and vegetables occur as a result of poor conditions harvesting and storage.	230 (66.7)	115 (33.3)
There is more protein in a glass of whole milk than skimmed milk.	338 (98.0)	7 (2.0)
Drinking more water during breastfeeding increases the amount of milk.	70 (20.3)	275 (79.7)
Variety of food in the diet helps the body get enough vitamins and minerals every day.	314 (91.0)	31 (9.0)

Source: Asiedu Agyekum(2021)

The majority of the nursing mothers representing 338 (98%) indicated that their diet affect growth of their children whereas 7 (2 %) disagreed. Again, greater percentage of the 314 (91%) nursing mothers concurred that a varied diet is beneficial for the body's absorption of vitamins and minerals while 2% said otherwise. Also, a number of the nursing mothers 217 (62.9%) agreed that cooking eliminates most of the vitamins and minerals in food whereas 128 (37.1%) disagreed. When it came to the consumption of additional fat during nursing, 288 (83.5%) of the majority disapproved, while 57 (16.5%) did not. Furthermore, the majority 315 (91.3%) of the nursing mothers were of the view that babies are vulnerable to diet-related disorders while 30 (8.7%) were otherwise. However, with regards to the type of food affecting the amount of breast milk produced, 108 (31.3%) of the mothers agreed that the type of food had influenced on the quantity of breastmilk produced while majority representing 237 (68.7%) disagreed with that statement. Finally, 70 (20.3%) of nursing mothers agreed with the assertion that consuming more water during breastfeeding increases milk production whereas 275 (79.7%), or the majority, disagreed. The findings further revealed that the majority of the nursing mothers responded yes to the items under knowledge on diet.

The level of lactating mothers' knowledge on diet

Figure 2 examined the level of lactating mothers' knowledge on diet. The result from the field pointed that less than 10 percent of the nursing mothers had very high knowledge on their diet, 8.1 percent of the mothers had high knowledge on their diet while less than 14 percent of the mothers had low knowledge on their diet. Again, the findings revealed that the majority of the

nursing mothers within the study area had moderate knowledge on their diet. This implies that great part of the nursing mothers within the study area had some form of knowledge with regards to their diet.

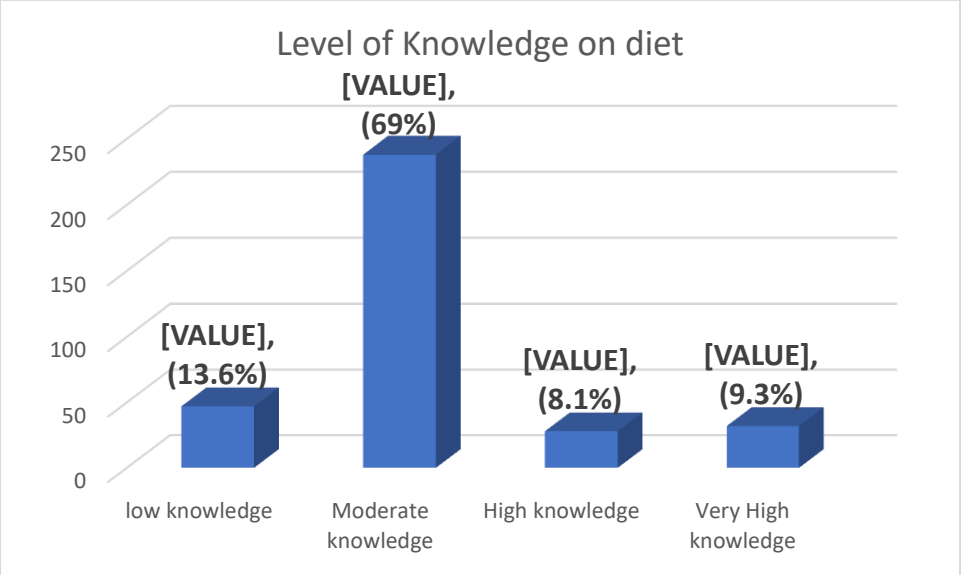

Figure 3: Level of Knowledge on diet
Source: Asiedu Agyekum, (2021)

Association between levels of knowledge on diet and dietary knowledge of lactating mothers

The chi square analyses were used to evaluate the differences between the level of knowledge on diet and dietary knowledge. Table 5 presents the cross-tabulations of the level of knowledge on diet and dietary knowledge. The test of association indicated that there is an association between the level of knowledge on diet and drinking of water is important during breastfeeding by lactating mothers. This means that a good knowledge on diet provides information about the likelihood of drinking water during breastfeeding. The association may emphasize the necessity of focused educational activities to raise knowledge levels among breastfeeding mothers. This could include offering information on the importance of food and water intake for effective

breastfeeding. In other words, the knowledge level of lactating mothers might influence their behaviour regarding water intake during breastfeeding. Finally, the was association between levels of knowledge on diet and majority of the items under dietary knowledge of lactating mothers.

Table 5: Chi-Square test of association between levels of knowledge on diet and dietary knowledge of lactating mother

Variables	LK	MK	HK	VHK	Total	X^2	Sig.
I seek out nutrition information							
No	39	197	10	0	246	115.279	0.000
Yes	8	41	18	32	99		
Lactating mother's diet affect the growth of the child							
No	0	7	0	0	7	3.212	0.360
Yes	47	231	28	32	338		
Babies are vulnerable to diet diseases							
No	3	17	10	0	30	29.832	0.000
Yes	44	221	18	32	315		
There are foods that should not be eaten during breastfeeding							
No	47	74	0	0	121	121.075	0.000
Yes	0	164	28	32	224		
Drinking of water is important during breastfeeding							
No	12	18	0	0	30	22.879	0.000
Yes	35	220	28	32	315		
The food you eat affects the taste and smell of the breast milk							
No	47	210	0	0	257	214.976	0.000
Yes	0	28	28	32	88		
The type of food you eat affects the amount of breast milk.							
No	44	193	0	0	237	162.249	0.000
Yes	3	45	28	32	108		
It is good to take more vitamins during breastfeeding							
No	3	24	0	0	27	6.912	0.075
Yes	44	214	28	32	318		
It is good to take more energy giving food during							

breastfeeding							
No	9	17	0	0	26	14.039	0.003
Yes	38	221	28	32	319		
It is good to take more minerals during breastfeeding							
No	15	22	0	0	37	29.795	0.000
Yes	32	216	28	32	308		
It is good to take more fat during breastfeeding							
No	47	231	10	0	288	249.128	0.000
Yes	0	7	18	32	57		
Vitamins and minerals cannot be made by the human body and must be obtained from the diet							
No	0	7	0	0	7	3.212	0.360
Yes	47	231	28	32	338		
Vitamins and minerals are essential for growth of children							
No	17	15	0	0	32	49.034	0.000
Yes	30	223	28	32	313		
Vitamins provide energy							
No	44	200	0	0	244	177.207	0.000
Yes	3	38	28	32	101		
Most vitamins and minerals are lost during cooking of food							
No	47	81	0	0	128	116.031	0.000
Yes	0	157	28	32	217		
Fortified maize meal is a very good source of vitamins and minerals							
No	3	17	5	0	25	7.246	0.000
Yes	44	221	23	32	320		
Most vitamins are not stored in the body and must be taken daily							
No	3	24	0	0	27	6.912	0.075
Yes	44	214	28	32	318		
Minerals help to build strong bones and teeth							
No	8	15	5	0	28	12.437	0.006
Yes	39	223	23	32	317		
Fruits and vegetables are the best sources of vitamins and minerals							
No	11	25	6	0	42	12.843	0.006
Yes	36	213	22	32	303		

Vitamins losses from fruits and vegetables occur as a result of poor conditions harvesting and storage							
No	44	71	0	0	115	108.175	0.000
Yes	3	167	28	32	230		
There is more protein in a glass of whole milk than skimmed milk							
No	0	7	0	0	7	3.212	0.360
Yes	47	231	28	32	338		
Drinking more water during breastfeeding increases the amount of milk							
No	44	221	10	0	275	190.281	0.000
Yes	3	17	18	32	70		
Variety of food in the diet helps the body get enough vitamins and minerals every day							
No	0	21	10	0	31	32.267	0.000
Yes	47	217	18	32	314		

Source: Asiedu Agyekum, (2021)
LK= Low knowledge, MK = Moderate knowledge, HK = High Knowledge, VHK= Very High Knowledge

Research Question Three

The research question sought to find out about the environmental resources available to these lactating mothers. Data was collected from lactating mothers who visited the selected health facilities for post-natal services. A Yes/No interview guide was administered to the lactating mothers at the facilities. A list of items that measured the environmental resources available to lactating mothers was presented to respondents to indicate Yes/No to the statements. The result for the environmental resource available to the lactating mothers is presented in Table 6.

Table 6- Environmental Resource of Lactating Mothers

Environmental resource of lactating mothers	Frequency (%) Yes	Frequency (%) No
My community experience food shortage.	10 (2.9)	335 (97.1)
I get all the required food from my local market.	234 (67.8)	111 (32.2)
My community a farming community.	313 (90.7)	32 (9.3)
Food crops are grown in my community.	322 (93.3)	23 (6.7)
Prices of food stuff are affordable in your community.	40 (11.6)	305 (88.4)
Food supplement sold in your community.	112 (32.5)	233 (67.5)
My community a market centre.	200 (58.0)	145 (42.0)

Source: Asiedu Agyekum, (2021)

The results showed 322 (93.3%) of nursing mothers agreed that most of food crops are cultivated in their communities while 32 (9.3%) of the nursing women disagreed. Again, 234 (67.8%) representing majority of the lactating mothers pointed out that they get all needed food from their local market while 111 (32.2%) said otherwise. A good number of the nursing mothers representing 90.7 percent asserted that their community is a farming community while 9.3 percent of the nursing mothers said otherwise. However, concerning prices of food stuff, 40 (11.6%) representing minority agreed that food stuffs are affordable in their market while 305 (88.4%) of nursing mothers disagreed. Also, 112 (32.5%) of lactating mothers asserted that food supplement is sold in their communities while majority of 233 (67.5%) said otherwise.

Access to Environmental Resources Among the Lactating Mothers

Figure 3 access whether the lactating mothers within the study area had access to environmental resources. The result from the field shows that more than 55

percent had access to environmental while less than 45 percent of the nursing mothers had no access to environmental resources. This implies that on the average the majority of the nursing mothers in the study area had access to environmental resources.

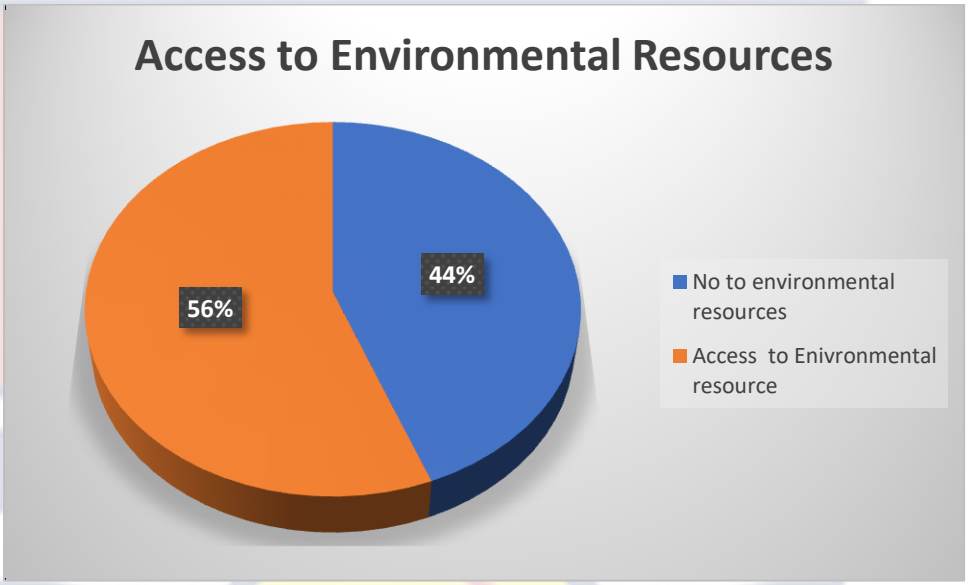

Figure 4: Access to Environmental Resources

Association between Environmental Resource and Access to Environmental Resources of Lactating Mothers

The chi square analyses were used to evaluate the differences between environmental resource and access to environmental resources. Table 7 presents the cross-tabulations of the environmental resource and access to environmental resources. The test of association indicated that there is an association between access to environmental resources and lactating mothers who had market centres within their communities. This suggest that a community with better access to environmental resources are more likely to have market centres. Thus, the presence of market centres might depend on the level of access to environmental resources within the communities. The association could have an impact on community planning and development.

Communities having better access to environmental resources may have a more favorable climate for economic activity, which may lead to the creation of market centers. Again, all the other variables under environmental resources were having an association with access environmental resources except food supplement sold in the community which was not statistically significant.

Table 7: Chi-Square test of association between environmental resources and access to environmental of lactating mother

Variables	No Access to Environmental Resources	Access to Environmental Resources	Total	X^2	Sig.
My community experience food shortage					
No	152	183	335	8.111	0.004
Yes	0	10	10		
I get all the required food from my local market					
No	101	10	111	146.258	0.000
Yes	51	183	234		
My community a farming community					
No	29	3	32	31.033	0.000
Yes	123	190	313		
Food crops are grown in my community					
No	20	3	23	14.400	0.000
Yes	132	190	322		
Prices of food stuff are affordable in your community					
No	152	153	305	35.634	0.000
Yes	0	40	40		
Food supplement sold in your community					
No	98	135	233	1.162	0.281
Yes	54	58	112		
My community is a market centre					
No	135	10	145	244.114	0.000
Yes	17	183	200		

Source: Asiedu Agyekum, (2021)

Research Question Four

The research question sought to find out the socioeconomic status of lactating mothers (food insecurity status). A Yes/No interview guide was administered to the lactating mothers at the facilities. A list of items that measured the socioeconomic status of lactating mothers was presented to respondents to indicate Yes/No to the statements. The items also measure the food security status of the lactating mothers. The result for the socioeconomic status of lactating mothers is presented in Table 8.

Table 8- Socio-economic status of lactating mothers

Socio-economic status of lactating mothers (Food insecurity status)	Frequency (%) Yes	Frequency (%) No
My household run out of money to buy food	70 (20.3)	275 (79.7)
I rely on a limited number of foods to feed my children because I always run out of money to buy food for a meal.	298 (86.4)	47 (13.6)
I sometimes cut the size of meals or skip any because there is not enough food in the house.	240 (69.6)	105 (30.4)
I sometimes eat less than I should because there is not enough money for food.	40 (11.6)	305 (88.4)
My children eat less than I feel they should because there is not enough money for food.	20 (5.8)	325 (94.2)
My children sometimes say they are hungry because there is not enough food in the house.	179 (51.9)	166 (48.1)
I sometimes cut the size of my children's meals or they skip meals because there is not enough money to buy food.	88 (25.5)	257 (74.5)
My children go to bed hungry because there is not enough money to buy food.	20 (5.8)	325 (94.2)

Source: Asiedu Agyekum, (2021)

According to the field results, 70 (20.3%) of the nursing mothers who participated in the data collection agreed that their household run out of money to buy food while 275 (79.7%) disagreed. Nonetheless, 298 (86.4%) of the nursing mothers representing the majority, stated that they rely on a limited number of foods to feed their children because they are running out of money to buy food for a meal while 47 (13.6%) disagreed. Once more, 240 (69.6%)

of nursing mothers agreed that with the statement that they cut the size of meals or skip meals because there is not enough food in the home while 105 (30.4%) said otherwise. Despite limited food in the home, 325 (94.2%) of lactating mothers representing majority never let their children ever go to bed hungry while 20 (5.8%) making minority disagreed. However, 94.2 percent of the nursing mothers representing the majority individuals asserted that they do not eat less than what they should because there is not enough money for food while the minority of the nursing mothers (5.8%) said otherwise.

Rate of food insecurity status (Socio-Economic Status of Lactating Mothers)

The socio-economic status of lactating mothers was used to measure the food insecurity status of the nursing mothers. According to the field results, less than 3 percent of the nursing mothers were food secure while less than 6 percent of the mothers were often times food insecure. Again, 2.9 percent of the mothers were sometimes food insecure and the majority of the nursing mothers representing 89.3 percent were rarely food insecure. The findings show that the majority of the nursing mothers were rarely food insecure. This shows that the food insecurity of the nursing mothers is manageable and not to the extreme level. Thus, these mothers are not able to eat the kind of food they prefer and sometimes have to eat limited amount of food because of lack.

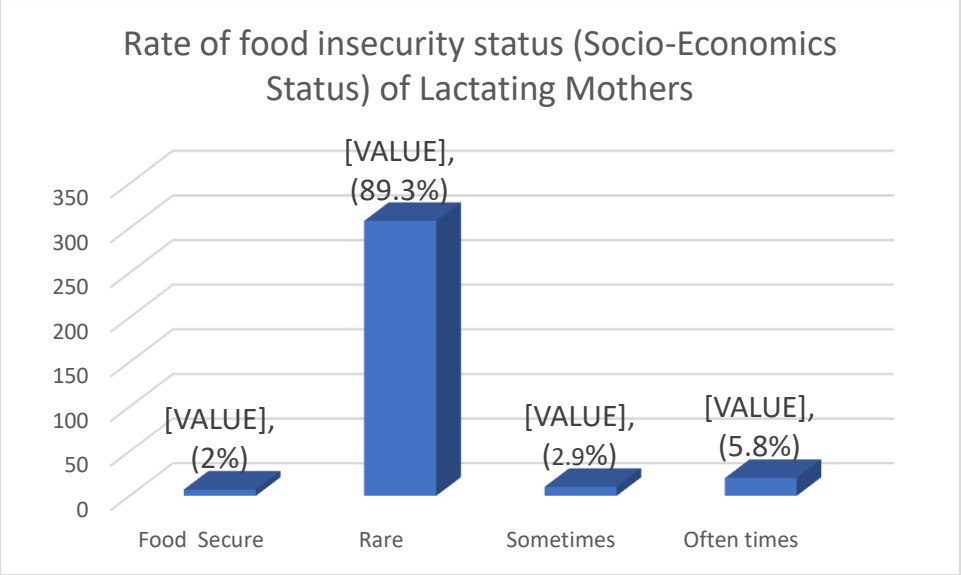

Figure 5: Rate of food insecurity
Source: Asiedu Agyekum, (2021)

Association Between the rate of food insecurity and food insecurity of Lactating Mothers

The chi square analyses were used to evaluate the differences between rate of food insecurity status and food insecurity. Table 9 presents the results of the chi square test. The test of association indicated that there is an association between the rate of food insecurity status and sometimes cutting the size of meals or skip any because there is not enough food in the house among the nursing mothers. By implication as the rate of food insecurity increases, the likelihood of nursing mothers cutting the size of meals or skipping meals also increases. The link could have a direct impact on the nutritional well-being of breastfeeding mothers. Due to food instability, reducing meal quantities or skipping meals might result in inadequate nutrition, affecting both the women and the infants they are breastfeeding.

Table 9: Chi-Square test of association between environmental resources and access to environmental of lactating mother

Variables	Food Secure	Rare Food insecure	So Fo ins
My household run out of money to buy food			
No	7	268	0
Yes	0	40	10
I rely on a limited number of foods to feed my children because I always run out of money to buy food for a meal			
No	7	40	0
Yes	0	268	10
I sometimes cut the size of meals or skip any because there is not enough food in the house			
No	7	98	0
Yes	0	210	10
I sometimes eat less than I should because there is not enough money for food			
No	7	298	0
Yes	0	10	10
My children eat less than I feel they should because there is not enough money for food			
No	7	308	10
Yes	0	0	0
My children sometimes say they are hungry because there is not enough food in the house			
No	7	149	10
Yes	0	159	0
I sometimes cut the size of my children's meals or they skip meals because there is not enough money to buy food			
No	7	240	10
Yes	0	68	0
My children go to bed hungry because there is not enough money to buy food			
No	7	308	10
Yes	0	0	0

Source: Asiedu Agyekum, (2021)

Research Question Five

Relationship between knowledge on diet, economic status, environmental resources and dietary habit of lactating mothers

Table 10 presents the relationship between knowledge on diet, socio-economic status, environmental resources and dietary habit of lactating mothers. Knowledge on diet, socio-economic status, environmental resources formed the independent variables of the correlation as dietary habit of lactating mothers was made the dependent variable. Davis (1971) posited that; the strengths of a correlation analysis depend on the associated coefficient

Table 10: Correlation of knowledge on diet, economic status, environmental resources and dietary habit of lactating mothers

Independent variables	Correlation coefficient	p-value	Strength of correlation
Knowledge on diet	0.081	0.134	Negligible
Socio-economic status	0.004	0.937	Negligible
Environmental resources	0.454	0.000	Moderate

Source: Asiedu Agyekum, (2021), *p-value<0.05

The study results show positive and insignificant relationship (r=0.081, p=0.134) between knowledge on diet and dietary habit. Again, socio-economic status had positive and insignificant relationship with dietary habits. Finally, environmental resources were having a positive and significant relationship (r=0.454, p=0.000) with dietary habits. This shows that lactating mothers who have access to environmental resources are more likely to see their dietary habits to improve. Thus, in order to improve the dietary habits of lactating mothers within the study area the is a need to improve access to environmental resources that will be of benefit to lactating mothers.

Effect of knowledge on diet, economic status, environmental resources and dietary habit of lactating mothers

The ordinary least square regression was employed to estimate the effect of knowledge on diet, socio-economic status and environmental resources on dietary habit of lactating mothers. Dietary habit was the dependent variable in the model while knowledge on diet, socio-economic status and environmental resources were the independent variables within the model. All the independent variable used in the model was significantly predicting the dietary habit of the nursing mothers. Tables 11 presents results on the effect of knowledge on diet, socio-economic status and environmental resources on dietary habit.

Table 11: Effect of knowledge on diet, economic status, environmental resources and dietary habit

Variables	Estimates	Std. Error	P-value
Constant	2.338	0.504	0.000
Knowledge on Diet	0.162	0.032	0.000
Environmental Resource	0.152	0.074	0.041
Socio-Economic Status	0.567	0.052	0.000

*** 1% significance level, **5% significance level, *10% significance level.
Source: Asiedu Agyekum

The knowledge on diet had positive relationship with dietary habit of the nursing mother and statistically significant at 1 percent. The results show that additional knowledge gain by the nursing mother on diet increase the probability of dietary habit by 0.162. This implies that knowledge gain on diet is likely to improve the dietary habit of the lactating mother. This also shows that nursing mothers with adequate knowledge on their diet have good dietary habit.

Access to environmental resource had a positive relationship with dietary habit and significant at 5 percent. The coefficient of environmental

resource being 0.152 indicate that an increase in the accessibility to environmental resources increases the probability of nursing mothers' dietary habit by 0.012 unit. This implies that nursing mothers who have access to environmental resources such as market availability are more likely have a good dietary habit. Through accessibility to environmental resources such a market among others, nursing mothers will be able to relied on food available in the market in order to improve their dietary habit.

Socio-Economic Status was having a positive relationship with dietary habit and significant at 1 percent. The socio-economic status was used to measure the food insecurity status of the nursing mothers. The results show that a unit increase socio-economic status such as access to food increase the probability of a good dietary habit by 0.567 unit. This implies that nursing mothers who have access or the means to acquire the necessary food items they need are more likely to have good dietary habit.

Discussion of the Findings

Dietary habit

According to Guesnet and Alessandri (2011), dietary habits are the eating patterns and dietary choices that people maintain over time. These habits are extremely important in determining general health and well-being. Dietary habits include many elements of food consumption, such as what, when, how much, and why people eat different foods. These sections of the study examined lactating mothers' dietary habit at the study area. It was found that the lactating mothers at Ahanta west have below average dietary habit. This is a clear indication that the majority of the respondents had dietary habits below the average level among the respondents. Individual nursing mothers'

circumstances can differ, and the following issues are generic considerations that may contribute to below average dietary habits.

Lactating mothers sometimes have rigorous schedules since they must care for both the infant and maybe other children. Due to time restrictions, quick and less nutritious eating choices may be made by lactating mothers resulting in low dietary habit. Again, the difficulties of caring for a baby might cause exhaustion and stress. Among these challenges, some mothers may find it difficult to prioritize their own nutrition (Forsido et al., 2021).

The results of the study confirm the result of Kimwele (2014) who shown that most of the children (85%) had dietary diversity below the average recommendations by the WHO. The children having dietary diversity below the recommended was an indication that their mothers have low dietary habit which resulted in the dietary state of their children. The result of the study affirms the study done by Hulshof, Brussaard, Kruizinga, Telman & Löwik (2003) who reported that dietary intake of nursing mothers was relatively closer to the recommendations by the Netherlands Food and Nutrition council. Again, (Forsido et al. 2021) reported that the diets of nursing mothers lack diversity and nutrient adequacy when examine the diversity, composition, and nutrient adequacy of diets among nursing mothers. Thus, all the commonly consumed maternal foods were not sufficient to meet the fat, energy and the protein requirements of nursing mothers.

Similarly, Chen et al. (2012) when determine the dietary pattern of lactating mothers on diet pointed out that total calories consumed from carbohydrate and protein, carbohydrate, vitamin B1, C, zinc, folate, calcium, and fibre intake was lesser that the nutrient intake recommended. The study

concluded that the dietary habit of the lactating mothers did not meet the recommended standard for many important micronutrients, which may influence the nutritional composition of breast milk and thus impact the potential health of mothers and infants. Ongosi (2010) found out that majority of women (92%) had energy intakes lower than the recommended. The results also affirmed the findings of this study which found out that generally the lactating mothers have lower dietary habit.

However, the findings of the study are at variant with Shumayla et al. (2022) when examining minimum dietary diversity and associated factors pointed out that about three-fourths of the lactating mothers were able to meet the minimum dietary requirement. Findings further stated that age, education, poor knowledge on diet were significantly predicting dietary habit.

The findings of this study together with other studies shows clearly that nursing mothers have poor dietary habit.

Maternal knowledge

According to Scaglioni et al. (2018), maternal dietary knowledge refers to mothers' information and awareness of nutritional requirements, dietary choices, and overall eating habits that contribute to their own and their children's health. The knowledge level of the lactating mothers was also accessed during the field exercise. This knowledge includes a variety of topics as indicated in Table 4.

The findings revealed that the majority of the nursing mothers within the study area had moderate knowledge on their diet. This implies that great part of the nursing mothers within the study area had some form of knowledge with regards to their diet. Thus, lactating mothers with a basic understanding

of nutrition are more likely to produce balanced and healthy breast milk. This ensures that infants get the nutrients they need for growth, development, and overall health (Kavle et al. 2017). Moreover, adequate maternal nutrition aids in the growth and development of infants. Proper nutrition, including vitamins, minerals, and lipids, aids in the development of the baby's brain, immune system, and overall organ function (Innis, 2014).

The finding of the study is in agreement with Ongosi (2010) who asserted that the lactating mothers had a good nutritional knowledge when examine nutrient intake and nutrition knowledge of lactating mothers. Socioeconomic status, cultural attitudes and customs, health status, and nutrition awareness were all recognized as possible factors influencing nursing women's nutritional knowledge

Similarly, the result of the study is in confirmation with Ahumah (2017) who stated that the overall knowledge level of lactating mothers on their diet was good for the nourishment of their children. The study further stated that the majority of the respondents with well-nourished children had knowledge on the accurate time for breastfeeding. Finally, the findings added that the mothers had knowledge on six different group and on protective food.

Likewise, Kimwele (2014) when investigating maternal knowledge on complementary feeding reported that based on the knowledge that the respondents acquired, they were able to provide a meaningfully different diet. This means that the lactating mothers in the study had a comprehensive knowledge on different diet that might be of benefit to their children.

The findings of the study also concur with Karcz et al. (2021) who pointed out that regardless of the reasonable knowledge of nursing mothers on

diet, both breastfeeding mothers and medical staff are still convinced of the beneficial effect of preventive dietary restrictions, which affects further lactational performance. The study further shows that knowledge on diet was best influence by breastfeeding and significant at 1 percent.

Finally, the findings of the study were at variance with Hundera et al. (2015) when determining the nutritional knowledge and determinant factors of lactating mothers discovered that 185 (57.8%) of nursing mothers had strong nutritional knowledge, while 135 (42.2%) of mothers had inadequate nutritional knowledge. The regression estimation from the study shows that family income and family size were significantly influencing knowledge on diet. Furthermore, the study concluded that the diet knowledge of the nursing mothers falls short of the national and international knowledge level.

The findings of the study and other study are in agreement that lactating mothers had some form of knowledge with regards to their diet. This knowledge will guide them to patronise the kind of food that will help them to produce enough milk for their children to feed on.

Environmental resource on diet

Environmental resources have a considerable impact on eating habits and food choices among nursing mothers. These resources are necessary for food production, distribution, and accessibility. The study assesses the environmental resource on diet by the lactating mothers, the results from the field study found that lactating mothers in the Ahanta West district had access to environmental resource on diet. Thus, more than 55 percent had access to environmental resources while less than 45 percent of the nursing mothers had no access to environmental resources. This implies that on the average the

majority of the nursing mothers in the study area had access to environmental resources. Lactating mothers who have access to environmental resources can reap various benefits, including improved maternal and newborn health and overall well-being. According to Mustafa, Mabhaudhi (2021), access to a diversified range of environmental resources, such as arable land and water, facilitates the production of a wide range of nutrient-dense foods. Lactating moms can have a more variety and balanced diet while still providing important nutrients to their infants through breast milk. Khalil et al. (2022) added that access to clean, uncontaminated environmental resources reduces the danger of being exposed to environmental toxins in food and water. This is critical for lactating moms' health and the safety of breast milk.

The finding of the study is in agreement with Ding et al. (2020) who pointed that the lactating mothers within the study area were able to have access to food. The findings further stated that consumption of staple foods was higher among lactating mothers within the study area when examine dietary and nutrient intakes among lactating mothers.

Similarly, Perez-Escamilla (2017) pointed out that access to environmental resources leads to improving the breastmilk of lactating mothers. According to Cavaye (2022), access to environmental resources promotes community resilience. Food systems that are sustainable and locally sourced can improve community support for breastfeeding women and provide a sense of food security. The result of the study also confirmed that of Vereecken et al., (2004) who stated that the dietary habit of the lactating mothers is influence by the food grown in the environment.

Socioeconomic status

Food insecurity among lactating mothers occurs when these mothers do not have consistent access to an adequate and nutritious food supply. This situation can have significant implications for both the maternal health and the well-being of the breastfeeding infant. The socio-economic status of lactating mothers was used to measure the food insecurity status of the nursing mothers. The results revealed that 2.9 percent of the nursing mothers were sometimes food insecure while the majority of the nursing mothers representing 89.3 percent were rarely food insecure. The findings show that the majority of the nursing mothers were rarely food insecure. This is a condition in which the nursing mothers' experiences food insecurity infrequently. Food insecurity is defined as a lack of continuous access to enough food to live an active and healthy life. When a nursing mother is defined as rarely food insecure, it implies that they have frequent access to a sufficient and nutritious food supply. However, there may be brief or infrequent periods when availability to food is restricted or unknown (Davies, 2016).

The findings of the study are in agreement with Ongosi (2010) who reported that 36 percent of the lactating mothers were with food, whereas 64 percent of them were either at risk of hunger or hungry. Thus, the lactating mothers within the study area could not buy food even if they were available in the local community or buy from elsewhere.

Again, Kang et al. (2019) when examine household food insecurity by lactating mothers stated that 68.6 percent of the lactating mothers experienced moderate or severe food insecurity. The findings further stated that the risk of

not eating meat/fish and eggs increased in a dose-response manner among breastfeeding mothers facing mild, moderate, or severe food insecurity.

Likewise, the findings of the study are in agreement with Getacher et al. (2020) who pointed out that there was significant frequency of food insecurity among lactating mothers. No formal education, no income-generating activities, no home gardening practice, spouse alcohol usage, low minimum dietary variety score, fewer than three meal frequencies, and three meals alone per day were all independent predictors of food insecurity.

Similarly, the findings of the study corroborate with Minas et al. (2020) who reported that food insecurity was highly prevalent in lactating mothers. The magnitude of the food insecurity among the nursing mothers was 68.8 percent and this indicated severely food insecure. The food insecurity of the lactating mothers was significantly influence by residing of the lactating mother, poor wealth, mothers who had less than three meals a day and mothers who did not have their own income.

Effect of Knowledge on diet, Environmental resource and socioeconomic status on dietary habit

Finally, the last objective of the study sought to examine the effect of knowledge on diet, environmental resource and socioeconomic status on dietary habits of lactating mothers. The findings of the study show that knowledge on diet, environmental resources and socioeconomic status had a significant positive effect on dietary habits.

The effect of diet knowledge can have a significant impact on the dietary choices of nursing mothers. When nursing mothers have adequate information about nutrition and a healthy diet, it influences their food choices,

general dietary patterns, and, as a result, the well-being of both the mother and the breastfeeding infant. According to Chakona and Shackleton (2019), mothers who are knowledgeable about nutrition are more likely to make informed decisions about the food composition of their diets. They may ensure that they are getting a healthy balance of vitamins, minerals, proteins, and other nutrients, which helps to improve the nutritional quality of breast milk. In addition, the maternal diet influences the quality of breast milk. A mother who understands correct nutrition is more likely to produce breast milk that meets the nutritional demands of her newborn and promotes normal growth and development.

Access to environmental resources was positively impacting dietary habit of lactating mothers. Food choices, nutritional intake, and overall well-being can all be influenced by the availability of specific resources. Environmental factors, such as closeness to markets and the availability of a varied range of agricultural goods, can have an impact on a mother's access to nutrient-dense diets. Adequate access promotes the consumption of a wide range of fruits, vegetables, and other vital foods in the maternal diet. Again, adequate food storage infrastructure, including refrigeration and preservation methods, promotes the availability of perishable goods. This can have an impact on lactating mothers' nutritional choices and meal planning (Sambo et al., 2016).

Finally, the socio-economic status was used as a measure of food security. Food security, defined as constant access to adequate nutritious food for an active and healthy life, is critical in determining lactating mothers' eating habits. Food security allows for dietary diversity since mothers have the

resources to incorporate a variety of foods in their meals. A varied diet adds to a greater spectrum of nutrients for both the mother and the breastfeeding newborn (Chakona & Shackleton, 2017). Similarly, Smith et al. (2022) revealed that food security improves the overall health of lactating women. A well-nourished mother is better suited to handle the demands of lactation, lowering the risk of nutritional deficits and accompanying health concerns.

The findings of the study are in agreement with Zelalem et al. (2017) who reported that education on nutrition among lactating mothers has a significant effect on diet quality. The results further stated that the main source of information for lactating mothers was health professionals. Likewise, Tessema et al. (2020) asserted that mothers with good diet knowledge had statistically significant association with nutritional practice of lactating mothers. Also, the findings are in line with Haileslassie et al. (2013) who pointed that the nutritional knowledge of the nursing mothers had favourable impact on their diet habit. Halder and Kejriwal, (2016) by inference also showed the same result. The enhancement in the nutritional status of the youngsters is an indication of better dietary habit of the lactating mothers. It is therefore concluded from the study of Halder and Kejriwal, (2016) that maternal knowledge correlates positively to dietary habit.

The result of this study confirms the result of Turrell and Kavanagh (2006) who reported that lactating mothers with low-income households were least likely to purchase foods that were comparatively high in fibre and low in fat, salt and sugar. This is a clear indication that the foods selected and consumed by the lactating mother were influenced largely by their income and

not their knowledge on diet or what is available in the local market they can buy from other market once the money is there.

Hjartaêker and Lund (1998) reported that practicing a healthy lifestyle with high socioeconomic status links to healthier diet. This finding is in the same direction with this study which has found that socioeconomic status is key in explaining the dietary habit of lactating mothers.

Finally, Mishra, Ball, Arbuckle & Crawford, (2002), confirmed that it can be said everywhere, every time, the purchasing power of lactating mothers largely influence their dietary habits. This is because even if they have knowledge, without money they cannot buy and with money can buy any food even if it is not available in their immediate market.

Chapter Summary

This study investigated the dietary habit of lactating mothers in the Ahanta West Municipality. The maternal knowledge, environmental resources and socioeconomic status had effect on dietary habit. Again, It was found that lactating mothers in the Ahanta west municipality have good dietary habit, maternal knowledge, environmental resources and socioeconomic status on diet.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study aimed effect of nutritional knowledge, socio-economics status and environmental resource on dietary habits of lactating mothers in Ahanta West in the Western Region. That is, to identify environmental and socio-economic factors of lactating mothers that contributes to their choice of dietary habit and ways of improving that situation. Again, the study sought to gather lactating mothers' views about factors that informs their choice of diet during lactation. A descriptive survey method was used, where a Yes/No interview were administered to lactating mothers from randomly selected communities within the municipality. The accessible population for this study comprised all lactating mothers in Ahanta West Municipality of the Western Region. The target population consisted of all lactating mothers who visit the selected health facilities in the Municipality for Reproduction and Child Health (RCH) services. A purposive, simple random and census were used to select 345 lactating mothers. The instruments that were used to collect data were a structure interview schedule. Frequency, percentages, Pearson Moment correlation coefficient and regression were used to analyse data for the study.

Key findings

1. The lactating mothers responded No indicating disagreement to the statements on dietary habit.
2. The majority of the nursing mothers responded yes to the items under knowledge on diet.

3. Most of the lactating mothers responded 'Yes' indicating agreement to the statements on environmental resource. This means that generally the lactating mothers have good environmental resource.
4. The results show that generally, the lactating mothers responded 'No' indicating agreement to the statements on socioeconomic status. This means that generally the lactating mothers have low socioeconomic status.
5. The The study results show positive and insignificant relationship, between socio-economic status and knowledge on diet and dietary habit. Again, socio-economic status had positive and insignificant relationship with dietary habits.
6. Knowledge on diet, socio-economic status and environmental resources was having positive impact on dietary habit.

Conclusions

Based on the findings of the study, the following recommendations can be made.

1. The lactating mothers responded No indicating disagreement to the statements on dietary habit. Thus, the majority of the lactating mother had below average level dietary habits.
2. The majority of the nursing mothers responded yes to the items under knowledge on diet. Again, greater part of the nursing mothers within the study area had moderate knowledge on their diet. This implies that great part of the nursing mothers within the study area had some form of knowledge with regards to their diet

3. Most of the lactating mothers responded 'Yes' indicating agreement to the statements on environmental resource. This means that generally the lactating mothers have good environmental resource. Thus, a good number of the nursing mothers in the study area had access to environmental resources
4. The results show that generally, the lactating mothers responded 'No' indicating agreement to the statements on socioeconomic status. This means that generally the lactating mothers have low socioeconomic status. In other words, greater percentage of the nursing mothers were rarely food insecure.
5. Knowledge on diet, socio-economic status and environmental resources was having positive impact on dietary habit. Thus, knowledge on diet, socio-economic status and environmental resources influence dietary habits of lactating mothers positively.

Recommendations

Based on the findings of the study, the following recommendations were made

1. Health practitioners and policy makers should adopt or adapt policies that will help sustain or improve the dietary habit of the lactating mothers which would help improve the quality of breastmilk in order to supply the required nutrient for their infant
2. Health practitioners, NGOs and other stakeholders should educate lactating mothers on the various diet necessary to improve the composition of their breastmilk to feed their infants.

3. It is further recommended that the Municipal Health Directorate (MHD) should have a policy that would provide financial support to lactating mothers. This would help boost their socioeconomic status which has been found to predominantly influence the dietary habit of lactating mothers.
4. These existing resources should be leveraged and expanded by community leaders. Additional community efforts, educational programs, or support systems that reinforce and improve the good environmental factors for nursing mothers should be implemented. By leveraging these resources, the community may continue to establish and nurture a welcoming atmosphere that promotes the health of lactating mothers and contributes to the overall health of both mothers and infants in the community.

Suggestions for Further Studies

Since the study was conducted in Ahanta West Municipality of the Western Region on lactating mothers, a similar study could be carried in other areas of Ghana. This is to find out if geographical location of lactating mothers would have any effect on the results found in this study.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

FACULTY OF SCIENCE AND TECHNICAL EDUCATION

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

INTERVIEW GUIDE FOR LACTATING MOTHERS

Respondent Consent

The purpose of this interview is to elicit information on **Dietary Habits among Lactating Mothers and the development of children under 5 years**. Your full participation will help make informed decision about the project. It would therefore be appreciated if you could provide responses to **all** items on this interview, and do it **honestly**.

You are assured of complete **confidentiality** and **anonymity** of all information provided. Your participation in this study is **completely voluntary**.

Please the appropriate response place to answer this interview to the best of your knowledge.

DIRECTIONS: Please tick [√] where appropriate, and for others you may specify by writing.

SECTION I: BACKGROUND DATA

1. Town: ……
2. Place of delivery: tick (√)
   a. Health facility ( )
   b. Home. ( )
   c. Other……(specify)…… ……
3. Age of baby.
   a. 0- 6 mnths( )
   b. 7- 12 mnths. ( )
   c. 1-2 years. ( )
   d. 2-5 years. ( )
4. Height _____ Weight at birth _____Present weight_____

5. What type of delivery did you have?
    a. Normal (vaginal
    b.) Caesarean section without general anaesthesia
    c. Caesarean section with general anaesthesia
    d. Other: (describe):

SECTION B: DIETARY HABITS OF LACTATING MOTHERS

Kindly provide Yes/No responses to these items on your dietary habit

S/N	Item	Yes	No
1	Do you always eat in the morning?		
2	Do you always take breakfast?		
3	Do you take food supplements?		
4	Do you eat once a day?		
5	Do you eat twice a day?		
6	Do you eat three times a day?		
7	Do you regularly take water?		
8	Do you eat more than three 3times a day?		
9	I do not drink water regularly?		
10	Do you take mineral supplement?		
11	Do you like fast food?		
12	you eat vegetables always?		
13	Do you regularly eat fruits?		
14	Are you on diet?		
15	Do you snack on foods like fan milk or yogurt, popcorn, or fruit?		
16	Does your staple food provides all the energy and benefits to my unborn child?		

SECTION C: LECTATING MOTHERS' KNOWLEDGE ON DIET

Kindly provide Yes/No responses to these items on your knowledge on diet

S/N	Item	Yes	No
1	Do you seek out nutrition information?		
2	Does lactating mother's diet affect growth of the child?		
3	Is the baby vulnerable to diet diseases?		
4	Are there foods that should not be eaten during breastfeeding?		
5	Is drinking of water important during breastfeeding?		
6	Does the food you eat affect the taste and smell of the breast milk?		
7	Do the type of food affect the amount of breast milk?		
8	Is it good to take more vitamins during breastfeeding?		
9	Is it good to take more energy giving food during breastfeeding?		
10	Is it good to take more minerals during breastfeeding?		
11	Is it good to take more fat during breastfeeding?		
12	Vitamins and minerals cannot be made by the human body and must be obtained from the diet?		
13	Are vitamins and minerals essential for growth of children?		
14	Do vitamins provide energy?		
15	Do most vitamins and minerals lost during cooking of food?		
16	Is fortified maize meal a very good source of vitamins and minerals?		
17	Most vitamins are not stored in the body and must be taken daily?		
18	Do minerals help to build strong bones and teeth?		
19	Are fruits and vegetable the best sources of vitamins and minerals?		
20	Can vitamins losses from fruits and vegetables occur as a result of poor conditions harvesting and storage?		
21	Is there more protein in a glass of whole milk than skimmed milk?		
22	Does intake of more water during breastfeeding increases the amount of milk?		
23	Does variety of food in the diet helps the body get enough vitamins and minerals everyday?		

SECTION D: ENVIRONMENTAL RESOURCE OF LACTATING MOTHERS

Kindly provide Yes/No responses to these items on your environmental resource

S/N	Item	Yes	No
1	Does your community experience food shortage?		
2	Do you get all needed food from your local market?		
3	Is your community a farming community?		
4	Are food crops grown in your community?		
5	Are prices of food stuff affordable in your community?		
6	Are food supplement sold in your community?		
7	Is your community a market centre?		

SECTION E: SOCIO-ECONOMIC STATUS OF LACTATING MOTHERS

Kindly provide Yes/No responses to these items on your socio-economic status

S/N	Item	Yes	No
1	Does your household ever run out of money to buy food?		
2	Do you ever rely on a limited number of foods to feed your children because you are running out of money to buy food for a meal?		
3	Do you ever cut the size of meals or skip any because there is not enough food in the house?		
4	Do you ever eat less than you should because there is not enough money for food?		
5	Do your children ever eat less than you feel they should because there is not enough money for food?		
6	Do your children ever say they are hungry because there is not enough food in the house		
7	Do you ever cut the size of your children's meals or do they ever skip meals because there is not enough money to buy food?		
8	Do any of your children ever go to bed hungry because there is not enough money to buy food?		

APPENDIX B

DAY ONE INTAKE QUESTIONNAIRE

Sample Person ID: |_|_|_|_|

Interviewer ID: |_|_| |_|_|: |_|_| (am / pm) Time Started

Date of Interview: |_|_|-|_|_|-20|_|_| |_|_|: |_|_| (am / pm) D M Y Time Ended

Date of Intake: |_|_|-|_|_|-20|_|_| Interview conducted at:
D M Y (1) Respondent's Home
(2) Survey Interview Centre
Day: Mon / Tue / Wed / Thu / Fri / Sat / Sun (3) Other location ___

Are you the person most responsible for planning or preparing the meals in your household?
(0) No (1) Yes(9) Refused (8) Don't know/Not sure

Introduction:
This part of the interview is to enable us to find out what you have eaten the previous day. All that you have eaten including drinks, snacks, sauces, spices, and salad dressings will need to be recalled.
There is no right or wrong answer in this interview, you only need to tell me what you have actually eaten. Do you have any questions? If not, let's start.

Interview steps:
A.. Quick List of Food Items
[Quickly record all food and drink items consumed in the previous day in the "Quick List of Food Items"]
Please tell me everything you ate or drank all day yesterday, from 6 o'clock yesterday morning until 6 o'clock this morning. Include all you ate and drank at home and away—even snacks. [Do not interrupt unnecessarily.]
[When respondent stops, ask:] Anything else?

Now, I'm going to ask you more details about the foods and beverages you just listed. I want you tell me "When", "which occasion", "what", "how much" and "where" you ate all your foods yesterday.

When I ask about amounts, you can use these measuring guides and food pictures for the size or weight of foods. (If at respondent's home) Please use

any of your own cups, mugs, or bowls to estimate the amount of food you ate or drank at home yesterday, or check any package labels that may be helpful. When you remember anything else you ate or drank as we go along, please tell me.

B. Column 1A: *About what time did you (eat/drink) the food?*
   Column 1B: *What would you call this occasion?*

Query about the food eaten: [GO TO FIB Q.2]

C. Column 2A: Transfer the Quick List Food to Column 2A, cross out the food in Quick List. Probe for the additions to the food/drink.
D. Column 2B: Ask about the ingredients and details.
E. What was the (food) you (ate/drank) made of? What food ingredients were in the (meal or dish)?

Did it have any other ingredients? [If yes] What were they?
[Request food labels if possible when respondent cannot answer the ingredients]
Ask about amounts: How much did you eat (each of them) ? [GO TO FIB Q.3]
Ask about the food source: Where did you obtain the (food)?

F. I'd like you to try to remember anything else you ate or drank yesterday, that you haven't already told me about, including anything you ate or drank while preparing a meal or while waiting to eat.

[When respondent says no, or when respondent stops, show hand card 1]
Did you eat these foods?
[If yes, ask for the details; If no, continue on step 8]

Food intake yesterday

6 am yesterday 12 noon 6 pm Midnight 6 am this morning

Morning	Afternoon	Evening	Night/early dawn

Individual Intake Form

Quick List of Food Items	Column 1		Column 2		Column 3	Column 4	Coder use only	
	A. Time	B. Occa-sion	A. Food/Drink and Additions	B. Description of Food/Drink and ingredient	How much of this (FOOD) did you actually (eat/drink)?	Where did you obtain the (FOOD)?	Food code	Amount

Occasion: 1. Breakfast 2. Brunch 3. Lunch 4. Dinner 5. Late night meal 6. Fruit

7. Food and/or beverage break, snack, alcohol beverage or other beverage 8. Other (specify):

Source of food:	**1. Homemade**	**2. Restaurant/cafeteria/fast food shop/deli**	**3. Food stall/hawker 4. Supermarket/Food store 5. Workplace tuck shop**
	6. Day care	7. Friend/relative's home	8. Party/BBQ/banquet/special event 9. Other (specify):