

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



**Association between caregivers' time allocated to child feeding and
adequacy of Infant and Young Child feeding of children between 6-23
months of age in Ga West Municipality.**

MASTER OF PUBLIC HEALTH (WEEKEND)

BY

USAMATU ALHASSAN

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JUNE 2025

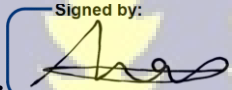
INTEGRI PROCEDAMUS

**A DISSERTATION SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR
THE AWARD OF MASTER OF PUBLIC HEALTH**

DECLARATION

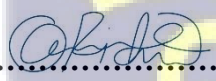
I, hereby affirm that this dissertation entitled “Association between caregivers' time allocated to child feeding and the adequacy of infant and young child feeding of children between 6-23 months of age in Ga West Municipality” is a presentation of my independent research. Proper attribution has been given to all referenced works. I also confirm that this dissertation has not been previously presented for any academic degree within this institution or any other educational establishment.

STUDENT NAME: ...Usamatu...Alhassan...

SIGNATURE:  **.....**
Signed by:
2F58C39A0815401...

DATE: 30/ 04/2025

SUPERVISOR: ...Prof...Richmond Aryeetey

SIGNATURE:  **.....**

DATE:20/062025...



ABSTRACT

Background:

Adequate infant and young child feeding (IYCF) is critical for child survival, growth, and development. The Minimum Acceptable Diet (MAD), a composite indicator comprising minimum dietary diversity and meal frequency, serves as a key measure of feeding adequacy. Time allocation, particularly the amount of time caregivers dedicate to child feeding, plays a critical role in determining the adequacy of infant and young child feeding (IYCF). Inadequate time for feeding may compromise a child's nutritional intake, especially in resource-limited settings. This study examined the association between caregivers' time allocation, particularly time spent on child feeding, and the adequacy of feeding among children aged 6–23 months in Ga West Municipality, Ghana.

Methods: A cross-sectional study was conducted among 384 caregivers with children aged 6–23 months. Data were collected at Child Welfare Clinics within the district using semi-structured questionnaires capturing socio-demographic characteristics, time use across various daily activities, household food security and IYCF practices. Feeding adequacy was assessed based on World Health Organization's MAD criteria. Logistic regression analysis was used to identify associations between time use and MAD, controlling for potential confounders.

Results: Overall, only about a third (34.6%) of caregivers spent more than an average of 90 minutes feeding their children daily. Children of caregivers who spent more than 90 minutes on feeding were more likely to meet MAD, though the association was not statistically significant (aOR = 1.37; 95% CI: 0.75–2.51; $p = 0.310$). Statistically significant predictors of MAD included tertiary education (aOR = 15.3;

95% CI: 3.50–66.9; $p < 0.001$) and household food security (aOR = 7.22; 95% CI: 2.60–20.1; $p < 0.001$).

Conclusion: Feeding time showed no significant relationship with dietary adequacy. However, education and household food security emerged as strong determinants of adequate child feeding. Interventions aiming to improve child nutrition should integrate caregiver education and household food access, alongside efforts to support responsive and adequate feeding practices.

Keywords: Infant and young child feeding, Minimum Acceptable Diet, caregiver time use, child nutrition, Ghana, dietary adequacy.



DEDICATION

I dedicate this work to my family who had to sacrifice a lot to see me through this course successfully and for their tremendous support throughout the entire period. Also to my friends and colleagues who helped and encouraged me one way or the other to keep going.



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Finally, I am deeply grateful to Almighty Allah for granting me the strength and resilience to pursue this course to its completion.



LIST OF ABBREVIATIONS

AOR: Adjusted Odds Ratio

ASF: Animal Source Foods

C.I : Conficence Interval

CWC: Child Welfare Clinic

GDHS: Ghana Demographic and Health Service

GHS: Ghana Health Service

GSS: Ghana Statistical Service

IYCF: Infant and Young Child Feeding

JHS: Junior High School

LPG: Liquified Petroleum Gas

LMICs: Low and Middle Income Countries

MAD: Minimum Acceptable Diet

MDD: Minimum Dietary Diversity

MMF: Minimum Meal Frequency

MMFF: Minimum Milk Feeding Frequency

NCDs: Non Communicable Diseases

OR: Odds Ratio



P- Value: Probability Value

SHS: Senior High School

UNICEF: United Nations Children's Fund

WHO: World Health Organization



TABLE OF CONTENTS

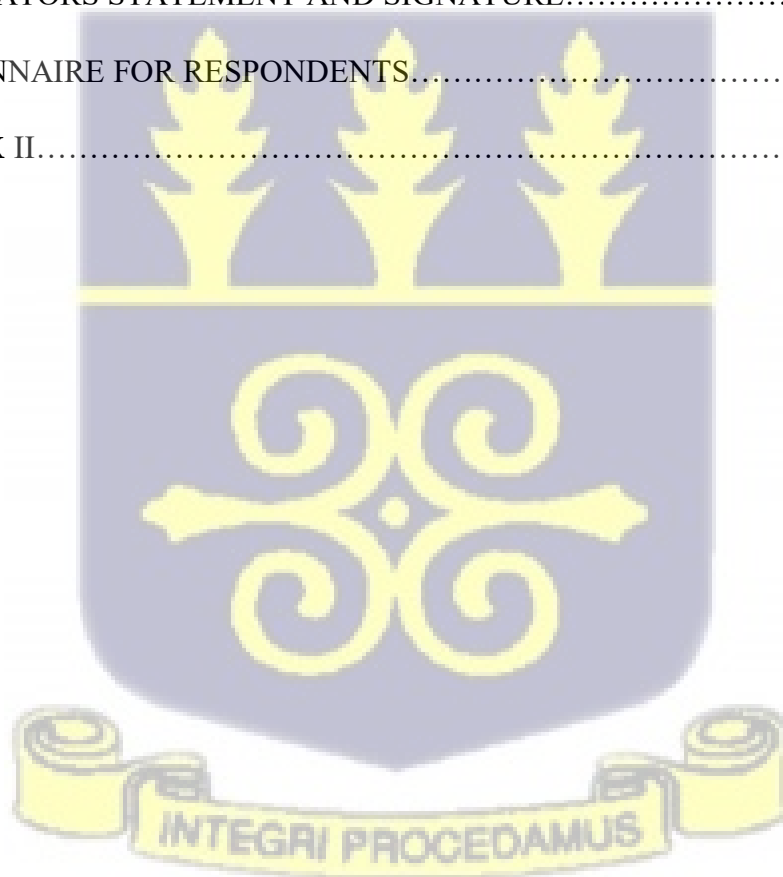
Declaration.....	I
Abstract.....	II
Dedication.....	IV
Acknowledgement.....	V
List of Abbreviation.....	VI
Table of content.....	VIII
List of Tables.....	XIII
List of Figures.....	XIV
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background of the study.....	1
1.2 Problem statement.....	3
1.3 Conceptual framework.....	4
1.4 Justification of the study.....	8
1.5 Research Questions and Objectives.....	8
CHAPTER TWO.....	10
LITERATURE REVIEW.....	10
2.1 Malnutrition Against children under five years.....	10
2.2 Nutrition Composition of Breast milk.....	10
2.2.1 Importance of Breast milk.....	11
2.3 Continued breastfeeding.....	11

2.4 Introduction of complementary foods.....	13
2.5 Minimum Milk Feeding Frequency.....	13
2.5.1 Milks for infants 6-11 months of age fed milks other than breast milk	14
2.5.2 Milks for young children 12–23 months of age fed milks other than breast milk.....	14
2.6 Dietary diversity.....	15
2.6.1 Animal source foods.....	16
2.6.2 Nuts, seeds and pulses	16
2.6.3 Fruits and vegetables	17
2.6.4 Starchy staple foods.....	17
2.6.5 Minimum Meal Frequency.....	18
2.6.6 Minimum Acceptable Diet.....	19
2.6.7 Unhealthy foods and beverages.....	20
2.7 Caregivers time allocation to feeding practices.....	21
2.7.1 Responsive feeding and time investment.....	22
2.7.2 Employment and time trade offs.....	23
2.7.3 Time poverty and Food security.....	24
2.7.4 Feeding duration.....	24
2.7.5 Meal Planning and Preparation.....	24
2.7.6 Gender roles and the burden of care.....	25
2.8 Socioeconomic and cultural influences.....	25
2.9 Conclusion.....	27
CHAPTER THREE.....	28
METHODOLOGY.....	28
3.1 Study area.....	28

3.2 Study design.....	28
3.3 Study population and sample size.....	28
3.3.1 Inclusion criteria.....	29
3.3.2 Exclusion criteria.....	30
3.4 Study variables.....	30
Dependent variables.....	30
Independent variables.....	30
3.5 Data collection tools.....	31
3.6 Quality control measure.....	31
3.7 Training of research assistants.....	32
3.7.1 Pre Testing and review.....	32
3.8 Data analyses.....	32
3.9 Ethical consideration.....	33
3.9.1 Risk and benefits.....	33
3.9.2 Confidentiality.....	34
3.9.3 Voluntary participation and right to withdraw.....	34
3.9.4 Competing interests.....	34
3.9.5 Dissemination of results.....	34
3.9.6 Funding.....	34
3.9.7 Budget.....	35
3.9.8 Timelines.....	36
4.0 Chapter Four.....	37
Results.....	37
4.1 Introduction.....	37

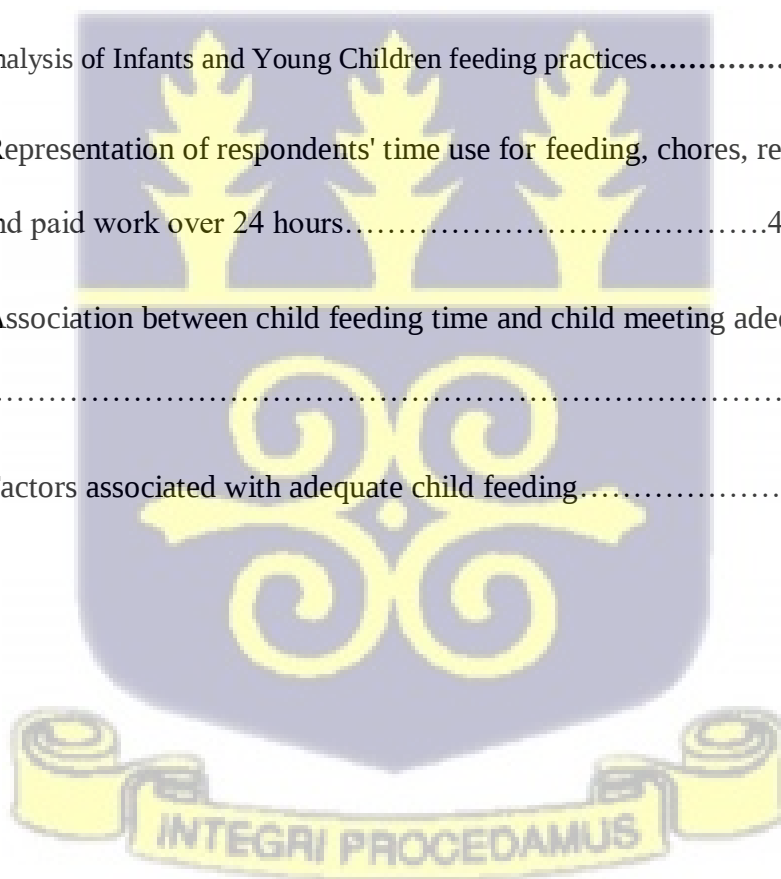
4.2 Demographic characteristics of respondents/child.....	37
4.3 Household food security and adequacy of child feeding.....	39
4.4 Child feeding adequacy.....	41
4.5 Infant and Young Child Feeding Indicators.....	42
4.6 Respondents' time use.....	44
4.7 Factors associated with adequate child feeding.....	46
5.0 CHAPTER FIVE.....	49
5.1 Introduction.....	49
5.2 Child Feeding Time and Adequacy of Feeding.....	49
5.3 Socio demographic and Economic Determinants.....	50
5.4 Feeding Practices and Indicators.....	50
5.5 Household Food Security.....	51
5.6 Other Factors associated with adequate child feeding.....	52
5.7 Limitations of the Study.....	54
6.0 CHAPTER SIX.....	57
6.1 Conclusion.....	57
6.2 Recommendations.....	58
6.2.1. Capacity Building for Health Workers.....	58
6.2.2 Intensify Integrated IYCF Education.....	58

6.2.3 Food Security Interventions.....	59
6.2.4 Further Research.....	60
REFERENCES.....	60
APPENDIX 1.....	81
Participants Information Sheet.....	81
CONSENT FORM.....	86
PARTICIPANTS STATEMENT.....	86
INTERPRETERS' STATEMENT.....	87
STATEMENT OF WITNESS.....	88
INVESTIGATORS STATEMENT AND SIGNATURE.....	89
QUESTIONNAIRE FOR RESPONDENTS.....	90
APPENDIX II.....	97



LIST OF TABLES

Table 4.1: Socio-demographic characteristics of respondents.....	37
Table 4.2: The table below shows some Indicators of food security.....	39
Table 4.3 Household food security status of study respondents.....	39
Table 4.4: Distribution of household food security by demographic characteristics of mothers/caregivers.....	40
Table 4.5: Distribution of adequacy of child feeding by demographic characteristics.....	41
Table 4.6: Analysis of Infants and Young Children feeding practices.....	43
Table 4.7: Representation of respondents' time use for feeding, chores, religious activities, and paid work over 24 hours.....	44
Table 4.8: Association between child feeding time and child meeting adequate feeding.....	46
Table 4.9: Factors associated with adequate child feeding.....	46



LIST OF FIGURES

Figure 4.1 Proportion of children who were adequately fed..... 44



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The World Health Organization and United Nations Children's Fund stress the significance of optimal nutrition during the initial two years of life in preventing malnutrition and fostering healthy growth and development (WHO & UNICEF 2020). To assess Infant and Young Child Feeding (IYCF) practices, WHO and UNICEF (2021) developed 16 core indicators in the WHO nurturing care guidelines. MDD, MMF and MAD are among the important indicators recommended by WHO for assessing complementary feeding practices among IYC aged 6-23 months (Appiah et al., 2020). However, new indicators were introduced in the nurturing care guidelines by WHO. Some of which include; sweet beverage consumption, unhealthy food consumption, zero fruits and vegetables (WHO, 2023). Globally, infant feeding practices exhibit significant diversity, with numerous regions encountering obstacles in meeting recommended feeding guidelines. Despite the recommendations from WHO/UNICEF as well as the significant benefits related to Infant and Young Child Feeding, several studies have reported sub-optimal rates of appropriate IYCF practices.

Worldwide, only 50.3% of children receive the minimum meal frequency (MMF), 28.2% achieve minimum dietary diversity (MDD), and a mere 15.9% meet the minimum acceptable diet (MAD) (White et al., 2017). In Sub-Saharan Africa, data from demographic and health surveys conducted between 2010 and 2016 reveal that 41.9% of children aged 6-23 months met MMF, 21% achieved MDD, and just 9.8% met MAD (Gatica-Dominguez et al., 2021). The prevalence of inadequate

complementary feeding remains high, with significant regional disparities. Findings from the 2022 Ghana Demographic and Health Survey (GDHS) show that 41% of children aged 6-23 months met the minimum dietary diversity, while 32% consumed sweet beverages, and another 32% ate unhealthy foods (Nsiah-Asamoah et al., 2022).

Adequate complementary feeding, encompassing the provision of suitable, secure, and nutrient-rich foods in addition to breastfeeding from six months of age onwards, is fundamental to child well-being (WHO 2008). However, in contexts where women are primary caregivers and also participate in income-generating and domestic responsibilities, the time available for direct child care and feeding is often constrained, potentially compromising feeding adequacy (Black, M. M., et al. (2013).

Caregivers often face the dilemma of balancing work and family obligations. Those who work long hours outside the home tend to prepare fewer meals and rely more on highly processed and convenient foods, such as porridge (Oloo & Parkes, 2021). Similarly, a study by Goh et al. (2022) found out that, women's time is constrained due to competing household and economic duties and can limit both the frequency and quality of child feeding practices. Also, Gillespie et al. (2019) emphasize that time poverty among caregivers may hinder responsive and adequate feeding, especially in resource-limited households.

Makinde et al. (2021) found that longer time spent in feeding was associated with improved dietary diversity and mealtime supervision, which are known to enhance nutrient intake and child satisfaction during meals. Moreover, Smith et al. (2003) observed in a cross-country analysis that maternal time allocated to child care (including feeding and supervision) had significant positive effects on child

nutritional status, particularly in the presence of adequate resources. This highlights the importance of both time quantity and the context in which feeding occurs.

1.2 PROBLEM STATEMENT

Despite global and national efforts to promote optimal infant and young child feeding (IYCF) practices, under-nutrition remains a pressing public health issue, particularly in the first two years of life—often referred to as the "critical window" for child growth and development (WHO, 2003; PAHO, 2003). In Ghana, sub-optimal complementary feeding contributes significantly to malnutrition, with many children failing to meet the Minimum Acceptable Diet (MAD) requirements (GSS & GHS, 2022).

While several studies have investigated the influence of socio-economic, cultural, and demographic factors on IYCF practices, caregivers' time allocation to feeding, a key behavioral determinant, has received comparatively little attention (Goh et al., 2022; Headey et al., 2012). As more women, particularly mothers, enter the workforce and manage multiple responsibilities, time constraints have become a significant barrier to appropriate feeding practices (Kimani-Murage et al., 2015). Caregivers with limited time may rely on less nutritious, pre-prepared foods and may be unable to provide the responsive feeding interactions necessary for encouraging diverse and adequate dietary intake (Oloo & Parkes, 2021; Black et al., 2013).

Emerging evidence indicates that the time caregivers dedicate to planning, preparing, and feeding meals has a direct impact on children's dietary diversity, meal frequency, and overall adequacy of feeding (Arimond & Ruel, 2004; Kim et al., 2011). Inadequate time for feeding may compromise meal quality and reduce opportunities

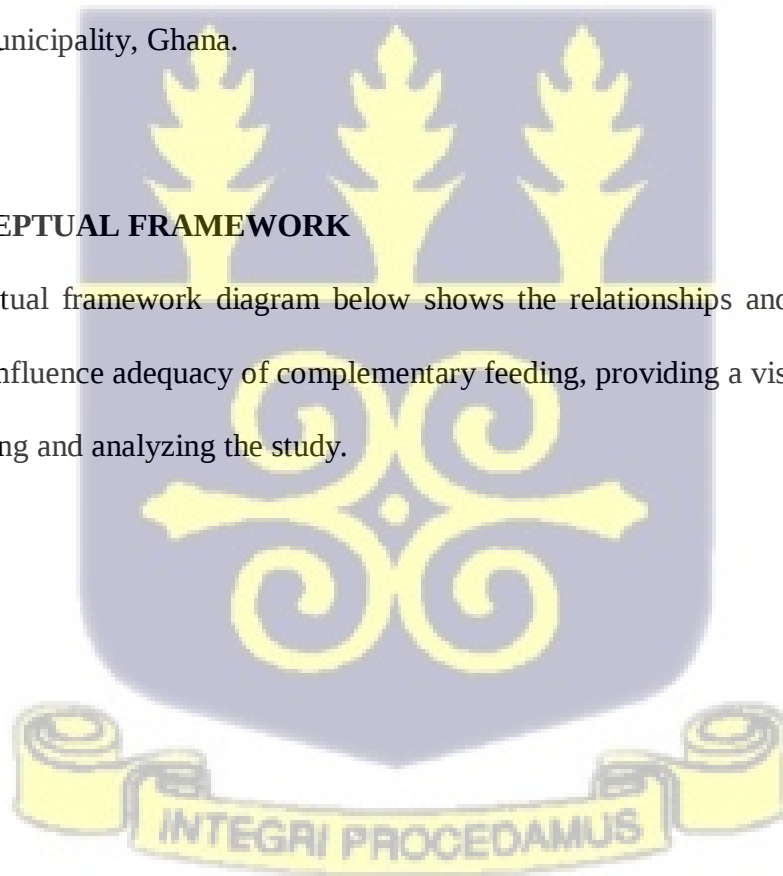
for children to learn healthy eating behaviors, thus reinforcing poor nutritional outcomes.

However, research on caregivers' time use in relation to IYCF practices remains limited in Ghana. Most available studies are either rural-focused or embedded within agricultural or economic interventions, lacking direct assessment of time spent on child feeding in the urban-rural transitional settings like Ga West Municipality (Saaka et al., 2016; Goh et al., 2022).

This study, therefore, seeks to assess the relationship between caregivers' time allocated to child feeding and feeding adequacy among children aged 6–23 months in Ga West Municipality, Ghana.

1.3 CONCEPTUAL FRAMEWORK

The conceptual framework diagram below shows the relationships and factors that interact to influence adequacy of complementary feeding, providing a visual guide for understanding and analyzing the study.



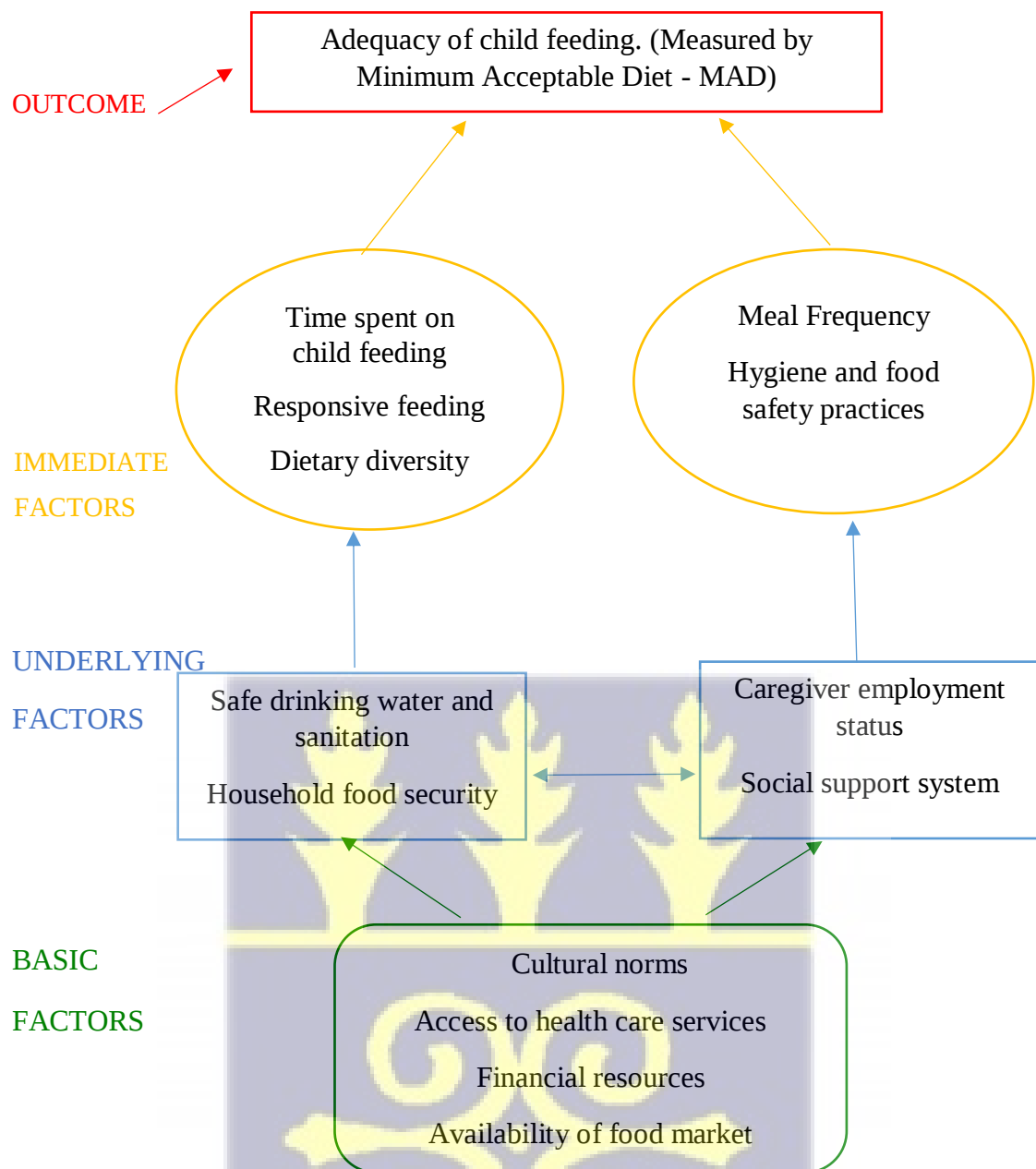


FIGURE 1 (UNICEF, Nutrition Strategy 2020-2030).

NARRATIVE FOR CONCEPTUAL FRAMEWORK

The conceptual framework illustrates the pathway through which caregivers' time allocated to child feeding influences the adequacy of infant and young child feeding among children aged 6–23 months in Ga West Municipality.

1. Outcome

The central outcome of interest is “Adequacy of child feeding”, measured by the Minimum Acceptable Diet (MAD). This includes both Minimum Meal Frequency (MMF) and Minimum Dietary Diversity (MDD), essential indicators for assessing whether a child’s nutritional needs are being met.

2. Immediate Factors

These are the most direct influences on child feeding adequacy:

Time spent on child feeding: Includes active engagement during feeding, encouragement, and monitoring the child’s intake. This is the main independent variable.

Meal frequency and dietary diversity: These serve both as components of the outcome (MAD) and as intermediate practices influenced by caregiver behavior.

Food hygiene and safety: Sanitary conditions and food handling also influence dietary outcomes.

3. Underlying Factors

These contextual elements shape caregivers’ capacity to spend time feeding:

Household food security: Food-secure households are more likely to have adequate, diverse foods available for feeding.

Caregiver employment status: Employment may reduce available time for feeding or affect the type of foods prepared.

Social support systems: Assistance from partners or extended family may ease caregiver burden.

Access to clean water and sanitation: Supports hygiene practices related to food preparation and feeding.

4. Basic Factors

These are foundational socioeconomic and environmental conditions that indirectly influence all other levels:

Caregiver education and income: Educated caregivers may have better knowledge and skills for appropriate feeding.

Cultural beliefs and norms: Influence what foods are deemed appropriate, how feeding is conducted, and who is responsible for child care.

Availability of food markets and healthcare services: Affects physical access to diverse foods and child health services.

Conclusion

This framework emphasizes that time spent on child feeding, while crucial, does not operate in isolation. It is shaped by broader economic, cultural, and infrastructural conditions, and works in conjunction with care practices and food availability to influence child nutrition. Therefore, interventions aiming to improve feeding adequacy must consider these multilevel influences.

1.4 JUSTIFICATION OF THE STUDY

Numerous studies on Infant and young child feeding practices have identified various factors influencing infant feeding practices including contextual factors. However, time invested in child feeding practices to attain ideal infant and young child feeding is not a common research topic studied in Ghana. This study seeks to provide more information on the relationship between caregivers' time allocated to child feeding throughout the day and how it affects adequacy of feeding. It will help the municipal health directorate in formulating feasible interventions geared toward educating caregivers on strategies to improve complementary feeding practices to improve the nutritional outcomes of the children. The amount of time caregivers` dedicate to feeding significantly impacts the standard and regularity of meals provided to infants and young children. According to research, caregivers' involvement in feeding can influence children's acceptance of food, the frequency of meals, and overall dietary diversity. Also, caregivers who spend more time actively feeding their children are likely to ensure that dietary needs are met, contributing to adequate nutrition. Conversely, when caregivers are time-constrained, children are more likely to be fed less nutritious, and are most often fed with pre-prepared foods (Bentley et al, 2011).

1.5 RESEARCH QUESTIONS AND OBJECTIVES

1. How much time do caregivers allocate to child feeding on a daily basis in Ga West Municipality?
2. What is the relationship between the amount of time caregivers spend on child feeding and the adequacy of infant and young child feeding practices
3. What socio-demographic and contextual factors are associated with adequate infant and young child feeding among children aged 6–23 months?

GENERAL OBJECTIVE

To examine the association between caregivers' time allocated to child feeding and the adequacy of infant and young child feeding among children aged 6–23 months in Ga West Municipality.

SPECIFIC OBJECTIVES

- 1) To determine the average daily time caregivers allocate to child feeding in Ga West Municipality.
- 2) To assess the relationship between the time caregivers spend on feeding and the adequacy of infant and young child feeding (based on MAD, MDD, and MMF).
- 3) To identify the socio-demographic and contextual factors associated with adequate infant and young child feeding practices among children aged 6–23 months.



CHAPTER TWO

LITERATURE REVIEW

2.1 MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS

Malnutrition remains a significant health challenge affecting children under the age of five. According to the 2020 Global Nutrition Report, 149.2 million children under 5 years experience stunting representing (21.9%), children who were underweight were 49.5 million being (7.3%) and 40.1 million children were obese representing (5.9%). Most countries in sub-Saharan Africa, sub-optimal infant feeding practices, low quality complementary foods, micro nutrient deficiencies and infections have greatly contributed to the deaths among children under 5 years (Lartey A. 2008).

Based on data from the Ghana Demographic and Health Survey, it was found that (19%) of children under one-year-old experienced stunted growth (they were shorter than expected for their age), while (5%) suffered from wasting (being thinner than normal for their height), moreover (11%) of these children were underweight (meaning they had a lower weight than what is typical for their age) (Ghana Statistical Service, GHS, ICF International; 2014).

Inadequate nutrition is linked to inadequate cerebral growth, poor academic achievement, reduced acquisition of human resources and economic productivity in later life (Leroy JL et al., 2014; Victora et al., 2008).

2.2 NUTRITIONAL COMPOSITION OF BREASTMILK.

Breast milk is vital for meeting nutritional needs of children aged two or beyond. A recent analysis showed that infants receive approximately 77% of their energy intake from breast milk at 6-8 months, 63% at 11 months, and 44% at 12-23 months (Rios-

Leyvraz M, Yao Q, 2023). Moreover, Breast milk is a key source of choline and omega-3 fatty acids like docosahexaenoic acid (DHA), essential for neural advancement and performance (Chen MY et al., 2018; Weiser MJ et al., 2016). These nutritional benefits of breast milk hold particular importance in regions with limited resources, where staple foods are predominantly starchy.

2.2.1 IMPORTANCE OF BREAST MILK

During the child's second year, breast milk remains a vital source of immune support, offering protection through a variety of non-nutritive elements such as white blood cells (Christian P, et al., 2021). This protection is especially crucial in environments with poor sanitation. Numerous research investigations have indicated that although the inclination towards other food options wanes during episodes of illness, the energy consumption associated with breastfeeding remains predominantly stable. Therefore, breast milk serves as a vital nutritional resource when children are unwell (Brown KH et al., 1989). Breastfeeding is also believed to exert a significant influence on both short- and long-term maternal health outcomes (WHO 2013, Chowdhury R, 2016).

2.3 CONTINUED BREASTFEEDING.

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) have advocated for the practice of extended breastfeeding, in conjunction with the introduction of complementary foods for a period of at least 2 years (WHO 2003). Over an extended duration, breastfeeding may play a pivotal role in diminishing the likelihood of certain cancers, type 2 diabetes, and cardiovascular disease (Chowdhury R, 2016). The American Academy of Pediatrics, previously

advocated for a 12-month duration of breastfeeding “as long as mutually desired” for 2 years or beyond (Kleinman R.E., Greer F.R.,2020).

Despite significant global variation, breastfeeding rates generally experience a sharp decline during the second year of a child's development. According to the Global Breastfeeding Scorecard (WHO,2023), predominantly drawing data from LMICs, 70% of children aged 12-15 months are breastfed, whereas only 45% of children aged 20-23 months received the same. In Europe, the prevalence of breastfeeding among children who are one-year-old spans from (1%) in Tajikistan to (78%) in Uzbekistan, with a median proportion of (28%) (Bosi A.T.B et al., 2015).

In order to implement continued breastfeeding which is recommended by WHO, it is essential for all lactating women to have a conducive environment and supportive resources (WHO, 2023).

For instance:

- Working women require facilities such as on- site child care, designated lactation rooms at the workplace, and flexible working hours.
- All women should have access to lactation counselling services to address any queries or difficulties that may arise during the breastfeeding process.
- Expectant mothers, new mothers, families and healthcare professionals must be shielded from exploitative marketing tactics employed by manufacturers and distributors of breast milk alternatives.
- Healthcare providers should possess the necessary knowledge and skills to provide evidence-based care in supporting breast feeding mothers.

2.4. INTRODUCTION OF COMPLEMENTARY FOODS.

Timely introduction of semi-solid and solid foods is paramount for an infant's growth and holistic well-being. Numerous studies have scrutinized this subject, with the prevailing consensus indicating that the introduction of complementary foods prior to four months may be detrimental. Conversely, there is generally no evidence suggesting adverse effects when complementary foods are introduced around the six-month mark (Perez-Escamilla R et al., Kramer M S & Kakum R, 2012). Concerns about introducing complementary foods before six months focus on four key risks: increased gastrointestinal illness in areas with poor sanitation, lower nutritional value compared to breast milk in resource-limited settings, inadequate developmental readiness, and a higher risk of obesity (Lutter CK, Grummer-Strawn L, Rogers L, 2021). Delaying the introduction of semi solid and solid foods may affect how well infants accept new flavors and textures. Furthermore, research suggests that postponing the introduction of foods like groundnuts may increase the likelihood of food allergies rather than prevent them. (Greer FR, Sicherer SH, Burks AW, 2019). This phenomenon could potentially extend to other allergy-causing foods such as milk. Across the world, it is common for infants to be introduced to complementary foods at an early age, with around (29%) of infants under 6 months of age in Low and middle income countries (LMICs) being fed these foods (UNICEF 2016).

2.5 MINIMUM MILK FEEDING FREQUENCY.

This guideline applies to milk given to children who are not breastfed. There exist a multitude of factors contributing to the decision not to breastfeed some infants and young children between the ages of 6 and 23 months. These factors may encompass an absence of a nurturing environment, maternal decisions, or, less frequently, a medical condition. Additionally, some infants who are breastfed may also be given

alternative types of milk. It is imperative that all children aged between 6 and 23 months partake in milk or another form of dairy product. While breast milk remains the primary source of nourishment for breastfed infants, other dairy foods can also be incorporated into their diet. Conversely, for children who are not breastfed, it is vital that they consume milk or another dairy product, particularly if they are not being provided with alternative animal-derived foods.

2.5.1 MILKS FOR INFANTS 6-11 MONTHS OF AGE FED MILKS OTHER THAN BREASTMILK

Animal milk is an important source of nutrients for infants aged 6-11 months who are not breastfed. It contains essential nutrients such as protein, calcium, riboflavin, potassium, phosphorus, magnesium, and zinc (Iannotti L, Lesorgol C 2014). Milk formulas are usually made from cow's milk, but some are plant-based. These formulas have been modified to closely match the nutritional content of breast milk, but they do not have the same immune-boosting properties and may not contain all the nutrients present in breast milk (Grenov B, Michaelsen KF, 2018). Due to aggressive marketing and concerns about child health, an International Code of Marketing of Breast Milk Substitutes was approved by the World Health Assembly in 1981.

The consumption of cow's milk during infancy has been linked to both gastrointestinal bleeding and iron deficiency anemia (IDA) (Ehrlich JM et al., 2022). However, it is uncertain how long this association persists.

2.5.2 MILKS FOR YOUNG CHILDREN 12-23 MONTHS OF AGE FED MILKS OTHER THAN BREASTMILK.

Young children who are not breastfed are typically given animal milk to aid their growth and development. There is ongoing discussion about whether they should consume lower-fat milk instead of full-fat to reduce saturated fat intake. Some

countries advise whole milk until 24 months of age, followed by low-fat options (Kleiman RE, Greer FR, 2020). Some types of milk are enriched with extra nutrients and heavily promoted as follow-up formulas. These formulas are widely consumed (Baker P et al., 2016). Nonetheless, a recent thorough assessment by the European Society for Paediatric Gastroenterology, Hepatology and Nutrition Committee on Nutrition revealed a significant variation in the formulations of these dietary products (Hojsak I et al., 2018). The Codex Alimentarius Commission articulates follow-up formula as "a nutritional preparation intended for incorporation as a liquid aspect of the weaning diet for infants from the sixth month onward, as well as for young children" (CODEX Alimentarius, 1987). The WHO's 2016 guidelines classify toddler milk formulas as breast milk substitutes, requiring regulation under the Code (WHO, 2018).

2.6 DIETARY DIVERSITY

Infants and young children need a diverse diet to fulfill their nutritional requirements and promote healthy growth and development (Lutter CK et al., 2021). The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) have outlined eight essential food categories for children, comprising: 1) breast milk; 2) animal derived proteins (meat, fish, poultry, and liver/organ meats); 3) dairy products (milk, yogurts, cheese); 4) eggs; 5) legumes and nuts; 6) fruits and vegetables rich in vitamin A; 7) other varieties of fruits and vegetables; and 8) grains, roots, and tubers. They have established the concept of minimum dietary diversity (MDD) as the consumption of at least five out of the eight specified groups (WHO & UNICEF, 2021).

Based on a recent UNICEF publication, only (28%) of children between the ages of 6 and 23 months worldwide adhered to the minimum dietary diversity (MDD)

guidelines (UNICEF, 2020). The regions with the lowest compliance rates were South Asia, West and Central Africa, and Eastern and Southern Africa, all hovering around (25%,) whereas Latin America and the Caribbean boasted the highest rate at (62%). In East Asia and the Pacific, 39% of children aged 6-23 months achieved the MDD standard, while in the Middle East and North Africa, the figure stood at (36%). Notably, infants aged 6-11 months exhibited the least dietary diversity in comparison to their older counterparts.

2.6.1 ANIMAL SOURCE FOODS

Animal-derived foods, such as eggs, dairy, fish, and meat, are abundant in both micro and macro-nutrients and offer high-quality proteins to facilitate growth and development (Iannotti LL, 2018). Animal-derived foods serve as the primary source of vitamin B12. Eggs, along with human breast milk, are recognized as an ideal source of protein (Iannotti LL et al., 2014). Although animal-source foods (ASFs), pose challenges for sustainable food systems, infants and young children have distinct nutritional requirements that warrant careful attention (Willett et al., 2019).

2.6.2 NUTS, SEEDS AND PULSES

Nuts, pulses, and seeds are rich in essential macro-nutrients like carbohydrates, protein, essential fats, and dietary fiber. They also supply key micro nutrients, including iron, zinc, and thiamine, which are often lacking in young children's diets. When paired with vitamin C-rich foods, they can enhance iron absorption. Additionally, these foods contain various antioxidants that support overall health. (Salas- Salvado J, 2006).

Nuts, pulses, and seeds are especially valuable in LMICs due to their affordability compared to animal-source foods. Their extended shelf life makes them suitable for

areas without refrigeration. However, aflatoxin contamination in peanuts, peanut products, and certain oil seeds like cottonseed can pose risks in some regions. (Pickova D et al., 2021).

A contemporary UNICEF report found that 78% of children aged 6–23 months had not consumed legumes the previous day. The percentage was 75% in low-income countries, 80% in middle-income countries, and 69% in high-income countries. (UNICEF, 2020).

2.6.3 FRUITS AND VEGETABLES

They are rich in micro nutrients, while also serving as a good source of fiber and beneficial phytochemicals (Slavin JL, Lloyd B, 2012). Introducing fruits and vegetables, particularly bitter ones, repeatedly during infancy has been linked to greater acceptance and higher consumption of these foods in later childhood. (Mennella JA et al., 2016).

Globally, only 59% of children aged 6 to 23 months consumed fruits or vegetables the previous day. In Latin America, the Caribbean, and East Asia and the Pacific, over 70% of children fell into this category, while the Middle East and North Africa saw 65%. In West and Central Asia, the percentage dropped to 44%, and in Eastern and Southern Africa, it was 38% (UNICEF, 2021).

2.6.4 STARCHY STAPLE FOODS

Grains like wheat, maize, and rice are the primary starchy foods in the diets of infants and young children, while barley, oats, millet, sorghum, rye, and quinoa are used less frequently (McKevith B, 2004). Additionally, grains contain high levels of phytates, which hinder nutrient absorption. Roots and tubers also serve as starchy staples, with

potatoes being a common complementary food in Andean countries. Diets heavily dependent on starchy staples as the primary energy source often lack sufficient nutrient density for infants and young children. According to national surveys in several LMICs, starchy foods are the most widely consumed food group, with 79% of children aged 6-23 months having eaten a starchy staple the previous day. (Salas-Salvado J, 2006).

2.6.5 MINIMUM MEAL FREQUENCY

WHO guidelines advise that breastfed infants aged 6-8 months receive complementary foods 2-3 times daily, while those aged 9-23 months should have 3-4 meals per day, along with 1-2 nutritious snacks. For non-breastfed children, the recommendation increases to 4-5 meals per day (WHO, 2003). Although meeting the minimum daily meal frequency offers significant benefits for children, many still lack access to age-appropriate, nutritionally adequate, and safe complementary foods. (WHO, 2016). Research indicates that approximately (52%) of children aged 6-23 months do not meet the recommended minimum number of meals per day, with certain countries in South Asia and Sub-Saharan Africa exhibiting the lowest levels of minimum daily meal frequency among all countries analyzed (UNICEF, 2016). Specifically, in Ghana, only (43%) of children between 6-23 months of age are provided with the requisite number of meals per day (GSS & GHS, 2015). A study in Ethiopia in 2015, found out that the proportion of children who received minimum meal frequency was 50.4%. The practice was higher compared to Mali (25%), Burkina Faso (31%), Democratic Republic of Congo (30%), Cameroon (41%) and India (42%) (WHO, 2010).

Another study revealed that the place of residence, information sources, family socioeconomic status, and the age of children were significantly linked to achieving the minimum meal frequency. Furthermore, it was found that caregivers residing in urban areas were three times more inclined to meet the recommended minimum meal frequency, as compared to mothers living in rural areas (Adjusted Odds Ratio = 3.02; 95% Confidence Interval 1.41, 6.48) (Belew et al., 2017).

2.6.6 MINIMUM ACCEPTABLE DIET

The WHO's guiding principles on feeding children, whether breastfed or not, suggest that children between the ages of 6 and 23 months should be provided with meals at appropriate intervals and a diverse range of foods to ensure that their energy and nutrient needs are adequately met (WHO, 2003 & WHO, 2005). This criterion encompasses both the minimum dietary diversity and meal frequency, with the additional specification that non breastfed children should have consumed milk at least twice on the preceding day. Globally, the 2020 global nutrition report: action on equity to end malnutrition revealed that (18.9%) of children aged 6-23 months received a MAD (Micha R, et al, 2020). Children in African countries such as Ghana, Uganda and Kenya received (29.9%, 23.9% and 48.5%) of recommended MAD respectively (Issaka AI, et al, 2015).

The consumption of adequate dietary standards offers a multitude of advantages, such as improved linear growth, enhanced cognitive development, elevated academic performance, reduced susceptibility to non-communicable diseases, strengthened immune system, and increased productivity in adulthood (Khanal V, Sauer K, Zhao Y, 2013). Adhering to a minimum acceptable diet is crucial in mitigating deficiencies in both macro and micro nutrients that can hinder linear growth (Akombi B, et al,

2017). The Minimum Acceptable Diet (MAD) assesses various facets of the dietary intake of infants and young children between the ages of 6-23 months who meet the requirements for both macro and micro nutrients. Conversely, the Minimum Dietary Diversity (MDD) and Minimum Meal Frequency (MMF) evaluate specific aspects of the diets of infants and young children who fulfill the requirements for micro and macro nutrients, respectively (WHO, 2010).

2.6.7 UNHEALTHY FOODS AND BEVERAGES

Infants and young children are consuming growing amounts of harmful foods and beverages, often classified as highly processed or ultra-processed. These products tend to contain excessive levels of sugar, salt, and harmful fats, including saturated and trans fats (Faubert et al., 2015, Pries et al., 2017).

Eating them is driven by several factors, including taste appeal, convenience, affordability compared to more nutritious options, widespread availability, and heavy marketing (Monteiro et al, 2019). Multiple research indicates that unhealthy snack foods and beverages can negatively impact young children's health, replace more nutritious options, and contribute to under-nutrition, obesity, and harmful cardio-metabolic effects (Faubert et al, 2015).

The WHO guidelines on consumption of sugar advise limiting it throughout life. The recommendation is to reduce free sugars to less than 10% of total daily energy intake, with an additional goal of lowering it further to below 5% if feasible (WHO, 2015). The latest WHO guidance on non-sugar sweeteners advises against using them for weight management or lowering the risk of non-communicable diseases (NCDs). (WHO, 2023).

2.7 CAREGIVERS TIME ALLOCATION TO FEEDING PRACTICES

Improving complementary feeding requires attention to foods as well as to feeding behaviour of caregivers. Infant and Young children need assistance that is appropriate for their age and developmental needs to ensure that they consume adequate amounts of complementary food (Pan American Health Organization, WHO 2003).

Time use is a critical yet under explored dimension of care giving that significantly affects feeding practices and, by extension, child nutrition outcomes. Time spent on feeding activities encompasses meal planning, food preparation, and the actual feeding process, including responsive interactions during meals. In many low- and middle-income countries (LMICs), competing responsibilities such as income-generating work, household chores, and care for other dependents often limit the time caregivers can devote to these crucial feeding practices (Johnston et al., 2014).

Studies show that when caregivers—especially mothers—have limited time due to employment or household demands, they tend to opt for quick, convenient foods which are often less nutritious (Kadiyala et al., 2014). In such contexts, feeding sessions may be rushed or delegated to others who may not apply optimal feeding practices. This compromises not only the frequency and diversity of meals but also the quality of interaction, which is a core component of responsive feeding (Pelto et al., 2003).

2.7.1 RESPONSIVE FEEDING AND TIME INVESTMENT

According to the WHO nurturing care guideline, responsive care giving refers to the ability of the caregiver to notice, understand and respond to their child's signals in a timely and appropriate manner. It is considered the foundational component of

nurturing care because responsive caregivers are better able to support the other four components. It includes both sensitivity and responsiveness (WHO, 2022). Responsive feeding, recommended by WHO, requires caregivers to pay close attention to the child's hunger and satiety cues, encourage eating without coercion, and provide a supportive mealtime environment (WHO, 2022).

Feeding infants and young children is an interactive process where they express hunger or fullness through gestures and facial expressions. Caregivers identify and respond with culturally and age-appropriate feeding practices, creating a nurturing and emotionally supportive environment (Black MM et al, 2011).

This style of feeding demands both emotional presence and sufficient time, as rushed or distracted caregivers may miss cues or force-feed, potentially disrupting healthy eating behaviors (Bentley et al., 2011). Studies suggest that caregivers who are time-constrained may default to passive or distracted feeding approaches, where children are either left to eat on their own or fed hastily, potentially reducing dietary intake and the development of positive feeding behaviors (Nguyen et al., 2011). According to Black and Aboud (2011), children are more likely to consume adequate amounts of food when caregivers engage in interactive feeding, which typically requires more time and attentiveness. However, in many low- and middle-income countries (LMICs), the pressure of multitasking—balancing household chores, agricultural work, and income-generating activities—limits caregivers' capacity to practice such responsive feeding, especially in food-insecure or low-resource households.

According to Nti and Lartey (2007), Ghanaian mothers who engaged more in responsive and prolonged feeding sessions had children with better dietary diversity scores. Their findings reinforce the idea that time investment in feeding is not just

about quantity but also about quality including attention, emotional engagement, and encouragement.

2.7.2 EMPLOYMENT AND TIME TRADE-OFFS

Several studies have highlighted the time-related trade-offs faced by working caregivers. A study by Arpino, Pronzato, and Tavares (2014) in LMICs revealed that employed mothers often face constraints in balancing job responsibilities with direct child care, including feeding. Time scarcity often leads to fewer cooked meals and increased reliance on commercial or pre-prepared foods, which may not meet children's nutritional needs (Gewa & Leslie, 2015).

Furthermore, time-use data from Tanzania analyzed by Ilahi (2000) showed that women's participation in labor markets was inversely associated with time spent on direct child care, particularly for feeding and health-related activities. Similar patterns were observed in Kenya, where time use surveys indicated that longer work hours were associated with lower dietary adequacy among children under two years (Wanjohi et al., 2017).

2.7.3 TIME POVERTY AND FOOD INSECURITY

Time poverty is increasingly recognized as a social determinant of health. Gillespie and van den Bold, (2017) argue that in food-insecure households, caregivers often work multiple jobs or spend extensive time sourcing food, reducing time available for careful meal planning and feeding. Thus, time poverty and food insecurity may co-occur, exacerbating child nutrition vulnerabilities.

In Ghana, Goh et al. (2022) found that caregivers experiencing both time and income constraints were less likely to prepare diverse meals or engage in active feeding. They emphasized that household-level strategies, such as shared childcare duties or social support from extended family, could help mitigate these constraints.

2.7.4 FEEDING DURATION

The dietary patterns and eating habits of young children should be a primary concern for caregivers (Haycraft E et al, 2011). Children may exhibit behaviors such as food aversions, selective eating, eating at a slow pace, showing reduced interest in food, and having a small appetite during meal times, all of which can impact the overall duration of feeding sessions (Carruth et al., 2004). A study by Kim et al. (2011) found that, shorter meal durations were associated with reduced dietary diversity and lower nutrient intake in young children. In contrast, longer meal times provided more opportunities to introduce a range of foods, thereby enhancing dietary quality and nutrient adequacy (Black et al., 2013).

2.7.5 MEAL PLANNING AND PREPARATION

The involvement in the production, acquisition, and preparation of food, as well as in child feeding and care, significantly influences the nutritional value of the food provided to children. Arimond and Ruel (2004) discovered that caregivers who have more time for meal preparation can offer a greater variety of nutrient-dense foods to their children. Conversely, time limitations may hinder caregivers from providing a diverse and healthy diet, resulting in sub optimal complementary feeding practices (Gewa & Leslie 2008- 2011).

Caregivers who have demanding jobs often find themselves making fewer meals and relying more on processed and convenient food choices, like instant porridge (Oloo & Parkes, 2021). This can be attributed to their busy schedules and the need for quick and easy meal solutions. Furthermore, these caregivers tend to stick to the same familiar foods when feeding their children, without paying much attention to providing a diverse and nutritious diet (Ahishakiye et al., 2019).

2.7.6 GENDER ROLES AND THE BURDEN OF CARE

Women disproportionately bear the burden of care giving, cooking, cleaning, and often, income generation. Time-use surveys in sub-Saharan Africa reveal that women spend up to 3 times more time than men on unpaid care giving work, which includes child feeding (UN Women, 2020). This has implications for both the quantity and quality of time available for nurturing care. When the caregiver lacks time or energy, feeding sessions become rushed, less engaging, and nutritionally inadequate (Goh et al., 2022).

2.8 SOCIOECONOMIC AND CULTURAL INFLUENCES

Profoundly held beliefs may pertain to the types of foods or preparation methods deemed beneficial for young children, the timing and types of complementary foods to introduce first, the appropriate individuals to feed young children, strategies for feeding children when they are unwell, methods for feeding a child who refuses to eat, or the effects of a child who refuses to eat, or the effects of food on a baby's sleep patterns (Paul et al., 2011).

Constant exposure to a variety of foods encourages acceptance, influences taste preferences, and increases the chances that a child will continue eating those foods

over time (Mannella & Trabulsi, 2012). Therefore, fostering dietary diversity in infancy is expected to support lasting, healthier eating patterns. However, in resource-constrained settings, caregivers may worry that introducing expensive foods like meat or eggs to young children could lead to food preferences that exceed their household's financial limits (Colecraft et al., 2006). Minimum dietary diversity was found to be significantly lower in non-working mothers and fathers, including mothers and fathers who worked in agriculture, caregivers with no formal education (Charmaine, Dibley & Agho 2011).

Infants from poorer households often receive inadequate complementary feeding a situation exacerbated by the limited access these families have to high-quality and diverse sources of complementary foods (Helle, Hillesund & Overby 2018). Some caregivers lack the necessary understanding of the significance of nutritious food during the implementation of complementary feeding for infants (Dhami et al., 2019). Processing this knowledge will empower caregivers to prepare superior types of complementary foods for their children, aiding them in selecting the suitable varieties of foods, and ensuring quality, portion size, and frequency of feeding (Fanta & Cherie 2020).

2.9 CONCLUSION

In conclusion, time management is a crucial factor in shaping caregiver feeding behaviours, which in turn greatly influence the quality of complementary feeding provided to children between the ages of 6 and 23 months. Positive caregiver-child engagement, proper feeding duration, and efficient meal planning and preparation are essential components of ideal complementary feeding practices.

CHAPTER 3

METHODOLOGY

3.1 STUDY AREA

Data for the study was collected in the Ga West Municipality. The municipality comprises of 4 sub-municipalities namely, Amasaman, Oduman, Kotoku, and Mayera. Health services in the municipality are provided through 37 public and 15 private facilities. The Child Welfare Clinics operate in about 52 locations (at health facilities and outreach post) within the district as a way of bringing primary healthcare services to the door step of the community members (Ga West Municipal Health Directorate annual report, 2023). Ga west in recent years has been classified as a (60%) urban and (40%) rural community (GSS, 2021).

3.2 STUDY DESIGN

This study used an analytical cross-sectional design in which quantitative data were collected. This study design was used because it was appropriate to gather information on prevalence and associations at a single point in time.

3.3 STUDY POPULATION AND SAMPLE SIZE

The study participants included 384 caregivers with children aged 6-23 months. This figure became the sample size derived from the Cochran's formula taking into consideration the population size of 347,417 (GSS, 2021). They were randomly selected from the Child Welfare Clinics in all four sub-districts through the simple random sampling method, using the lottery method. Each participant was then assigned a unique identification number written on identical pieces of paper. The

papers were thoroughly mixed, and selections were made blindly, one at a time, until the required sample size was reached.

Cochran's Formula: $n_0 = \frac{Z^2 \times p \times (1-p)}{e^2}$

Where:

Confidence Level (Z- level): 1.96 (for 95% confidence level) P: 0.5 (used when the true proportion is unknown)

e: Margin of error (5% or 0.05)

N: Population size (347,417)

$$n_0 = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

$$n_0 = 384.16$$

Adjust for the finite Population

The formula to adjust the sample size for a finite population is:

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{384.16}{1 + \frac{383.16}{347417}} = \frac{384.16}{1.001103} \approx 383.74$$

3.3.1 INCLUSION CRITERIA

The research encompassed parents or caregivers, including adolescent females and the elderly, with children aged between 6 and 23 months attending a Child Welfare Clinic for growth monitoring and promotion, and who were tasked with the feeding of the children.

3.3.2 EXCLUSION CRITERIA

The research excluded caregivers who were not directly responsible for the feeding of a child or children aged between 6-23 months.

3.4 STUDY VARIABLES

DEPENDENT VARIABLE

This outcome variable (adequacy of feeding) was based on core infant and young child indicators mentioned in the infant feeding guideline developed by World Health Organization (WHO, 2023). It was derived by measuring Minimum Dietary Diversity (assessing the children who met both minimum meal frequency and minimum dietary diversity).

The dependent variable was assessed through 24-hour dietary recall questions in the research questionnaire, which were administered to the caregivers to gather details on the foods provided to children on the preceding day.

INDEPENDENT VARIABLES

The independent variables were selected based on previously published studies. The independent variables are broadly classified into socio-demographic and economic related factors, time factors and contextual factors. Socio-demographic factors included the age of mother, age of child, sex of child, caregiver's occupation, caregiver's education (None, primary, Junior High School, Senior High School, Tertiary, place of residence (rural, urban), type of toilet facility, type of fuel mainly used for cooking, household possession etc (GDHS, 2022), Household food security and time spent on feeding and other activities. Information on time use was obtained through caregivers' recall of previous day's average time allocated to feeding the

child and other activities. Moreover, it was measured by recording the average duration (in minutes) that caregivers engaged in the act of feeding children for the previous 24 hours before the interview. Furthermore, other activities conducted by the caregivers within the household were scrutinized to ascertain whether an adequate amount of time is being allocated towards the feeding process. A time utilization questionnaire formulated by the Ghana Statistical Service served as a guide. Contextual factors included; Cultural norms, access to health care services, and availability of markets. Caregivers were asked specific questions also embedded in the questionnaire to address these factors.

3.5 DATA COLLECTION TOOLS

The study collected primary data from caregivers visiting Child Welfare Clinics in Ga West Municipality in the Greater Accra Region of Ghana using electronic semi-structured questionnaires via face-to-face interviews. The questionnaire was used to collect information on socio demographic and economic characteristics, infant and young child feeding indicators, and some contextual factors. Before proceeding with the questionnaire, the participants' consent were obtained.

3.6 QUALITY CONTROL MEASURE

Data was gathered by research assistants under close supervision. Questionnaires were administered by trained interviewers. The collected data were cross-checked to ensure completeness and consistency. In order to prevent redundancy, the questionnaire were assigned numerical codes. The information on the questionnaire were compared with the data inputted into Microsoft Excel to verify the accuracy of the entries.

3.7 TRAINING OF RESEARCH ASSISTANTS

To maintain the quality control of the study, the lead investigator conducted a training for the research assistants to ensure their proficiency in data collection protocols and methodologies. The training session encompassed a detailed overview of the questionnaire, ethical research guidelines, and the process of obtaining informed consent from study participants. To mitigate any potential interviewer bias, the research assistants were thoroughly briefed on the questionnaire.

3.7.1 PRE-TESTING AND REVIEW OF DATA COLLECTION INSTRUMENT

The final draft of the questionnaire was used in a pilot study with participants at the Ga West Municipal Hospital Child Welfare Clinic. To create the final questionnaire, the questionnaire was tested for reliability and validity, and the content was reviewed. Finally, any issues raised during the data-gathering process were documented and handled before the actual data collection.

3.8 DATA ANALYSES

Majority of the IYCF variables were dichotomized into binary variable;

“no = 0” and “yes = 1”. STATA version 17 and Microsoft Excel were used in the analysis. The statistical techniques employed in answering the research questions included descriptives, Chi-square test of association and logistic regression analysis. The descriptive statistics was used for proportions, means, medians of caregiver time and IYCF indicators; that the bivariate analysis was used, in this case chi-square tests, ttests to compare IYCF adequacy across caregiver time categories and for the multivariate analysis, i.e., logistic regression to test association between caregiver time allocation and IYCF adequacy while adjusting for confounders.

The outcome variable (adequacy of feeding), was derived by analyzing the total number of children who met both minimum meal frequency and minimum dietary diversity. Household food security was analyzed into households which are food secured, food insecure with no hunger, food insecure with hunger (moderate) and food insecure with hunger (severe).

Bivariate logistic regression was used to analyze the average time spent on feeding and other activities by all 384 respondents with the previous 24 hours and the outcome variable (adequacy of feeding) to determine if there is a relationship between the two variables. Socio-demographic and economic variables, household food security variables and contextual variables that showed statistical significant ($p \leq 0.05$) association with the outcome variable were also investigated using multivariate logistic regression to determine the variables which are barriers to adequate feeding. The regression outputs were reported in the form Odds Ratios (ORs) and adjusted odds ratios (aOR) with 95% confidence intervals (CIs).

3.9 ETHICAL CONSIDERATION

The study protocol was approved by the Ghana Health Service Ethics Review Committee with **Protocol ID No: GHS-ERC 041/09/24**. A written informed consent was obtained after explaining the study objectives to the participants. Participation was entirely voluntary, and caregivers either affixed their signatures or utilized a thumbprint (for those unable to read) on a formal statement of informed consent, subsequent to which they were interviewed. Permission was obtained from the Director of Health Services of the Municipal Health Directorate of Ga West Municipality.

3.9.1 RISK AND BENEFITS

Participation in the research entailed minimal risk. The duration of interviews and discussions may prove to be inconvenient for the study participants.

3.9.2 CONFIDENTIALITY

In order to uphold confidentiality, the identities of the individuals involved in the study remained undisclosed. The data collected was exclusively utilized for academic and research endeavors. Participants were distinguished through unique code numbers.

3.9.3 VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW

As enrollment in this research is of one's own volition, individuals have the liberty to respond to the questionnaire. They retained the right to exit the study at any juncture. Additionally, they had the freedom to abstain from answering any inquiries that elicit discomfort. Opting out of participation did not have any repercussion on the individual or their household.

Nevertheless, it is recommended that they engage actively in this study to enlighten us.

3.9.4 COMPETING INTERESTS

The lead researcher did not have any disclosed conflicts of interest.

3.9.5 DISSEMINATION OF RESULTS

The results of this study will be delivered to the School of Public Health, University of Ghana, Legon, as part of the requirements for a master's Degree in Public Health.

Furthermore, the findings will be shared with the authorities at the Ga West Municipal Health Directorate.

3.9.6 FUNDING

The lead researcher exclusively funded this study.

3.9.7 BUDGET

ITEM/ ACTIVITY	UNIT COST	QUANTITY	FREQUENCY	TOTAL (GHC)
Ethical Clearance	GHC 300	1	1	GHC 300
Training of research assistants				
Transportation	GHC 50	4	1	GHC 200
Snack	GH 20	4	1	GHC 80
FIELD WORK/ DATA COLLECTION				
Data Collectors allowance	GHC 100	4	3	GHC 1200
Transport for fieldwork	GHC 50	4	3	GHC 600
Meal	GHC 20	4	3	GHC 240
Internet bundle	GHC 50	4	1	GHC 200
FINAL WORK				
Print Out/ Hard Cover	GHC 250	4	1	GHC 1000
Miscellaneous			1	GHC 500
TOTAL				GHC 4320

3.9.8 TIMELINES

Project Timeline	Activity/	2024								
		Jan- Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	Develop a proposal and questionnaire									
	Present proposal to Department									
	Ethical clearance/ Approval									
	Recruitment and training of enumerators									
	Data collection									
	Data entry									
	Data Analysis and report writing									
	Disseminate results									

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the findings of the study. The chapter consists of analyses of demographic characteristics of the respondents and their children, food security at the household level, adequacy of child feeding, infant and young child feeding practices, the respondents' time use and barriers or factors that could influence the adequate feeding of the child. STATA version 17 and Microsoft Excel were used in the analyses. The statistical techniques employed in answering the research questions included descriptive, Chi-square test of association and logistic regression analysis.

4.2 Demographic characteristics of respondents/child

A total of 384 mothers/caregivers were considered in this study with a (100%) response rate. Table 4.1 presents the socio-demographic characteristics of the respondents with respect to the age category of their child: 6 – 11 and 12 – 23 months. The majority (60.7%) of the caregivers had a child aged 6 – 11 months. Also, majority (81.5%) of the mothers had some form or formal education where (15.4%) had attained the tertiary level of education. Furthermore, the majority (73.7%) of respondents resided in rural areas. The main source of drinking water for the majority (83.6%) of respondents was sachet water.

Table 4.6: Socio-demographic characteristics of mother/caregiver by age of child

Characteristic of caregiver	Frequency	Percentage
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Age (in years)		
< 20	25	6.5
20 – 29	123	32.0
30 – 39	169	44.0
40 – 49	58	15.1
50 – 59	9	2.3
Marital status		
Single/Never married	41	10.7
Married/co-habiting	313	81.5
Separated/widowed/divorced	30	7.8
Educational level		
None	71	18.5
Primary	71	18.5
Middle/JHS	98	25.5
SHS/Vocational/Technical	101	26.3
Tertiary (University, Colleges and Polytechnics)	59	15.4
Occupation		
Unemployed	52	13.5
Employed	332	86.5
Place of residence		
Rural	283	73.7
Urban	101	26.3
Main source of drinking water		
Sachet water	321	83.6
Borehole	52	13.5
Other	11	2.9
Toilet facility		
Dry pit latrine	146	38.0
Flush/pour flush	238	62.0
Cooking fuel		
Liquified Petroleum Gas	203	52.9
Charcoal/firewood	181	47.1
Total	384	100.0

4.3 Household food security and adequacy of child feeding

Household Food Security

Table 4.2 presents the indicators used in assessing food security. More than one-fifth (23.7%) of the respondents expressed concerns regarding having enough food to eat. However, a large proportion of respondents (99.7%) never went without eating for a whole day.

Table 4.7: The table below shows some Indicators of food security.

Item	Yes		No	
	<i>n</i>	%	<i>n</i>	%
You were worried you would not have enough food to eat?	91	23.7	293	76.3
You were unable to eat healthy and nutritious food?	89	23.1	295	76.8
You ate only a few kinds of foods?	134	34.9	250	65.1
You had to skip a meal?	43	11.2	341	88.8
You ate less than you thought you should?	103	26.8	281	73.2
Your household ran out of food?	10	2.6	374	97.4
You were hungry but did not eat?	17	4.4	367	95.6
You went without eating for the whole day?	1	0.3	383	99.7

Table 4.3 presents the proportion of households with food security. It was observed that the majority (62%; 95% CI. 57, 66.7) were food secure.

Table 4.8 Household food security status of study respondents.

Security	Frequency	Percent	95% C.I
Food Secure	238	61.9	57.0 to 66.72
Mildly food Insecure	77	20.0	16.33 to 24.37
Moderately food Insecure	65	16.9	13.49 to 21.03
Severely food Insecure	4	1.0	0.39 to 2.75

Table 4.4 presents the distribution of food security by characteristics of the respondents. It was observed that a substantial number of employed respondents (64.8%) were food secure.

Table 4.9: Distribution of household food security by demographic characteristics of mothers/caregivers

Characteristics	Food Secure	(mildly food insecure	moderately /Severely food insecure
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Age of caregiver (in years)			
< 20	8 (32.0)	6 (24.0)	11(44.0)
20 – 29	86 (69.9)	16 (13.0)	21 (17.1)
30 – 39	104 (61.5)	39 (23.1)	26 (15.4)
40 – 49	33 (56.9)	15 (25.9)	10 (17.2)
50 – 59	7 (77.8)	1 (11.1)	1 (11.1)
Marital status			
Single/Never married	10 (24.4)	11 (26.8)	20 (48.8)
Married/co-habiting	208 (66.5)	62 (19.8)	43 (13.7)
Separated/widowed/divorced	20 (66.7)	4 (13.3)	6 (20.0)
Educational level			
None	13 (23.6)	15 (27.3)	27 (49.1)
Primary	28 (39.44)	21 (29.6)	22 (31.0)
Middle/JHS	54 (55.1)	27 (27.6)	17 (17.4)
SHS/Vocational/Technical	85 (84.2)	13 (12.9)	3 (3.0)
Tertiary	58 (98.3)	1 (1.7)	0 (0)
Occupation			
Unemployed	23 (44.2)	12 (23.1)	17 (32.7)
Employed	215 (64.8)	65 (19.6)	52 (15.7)
Place of residence			
Rural	188 (66.4)	51 (18.0)	44 (15.6)
Urban	50 (49.5)	26 (25.7)	25 (24.8)

4.4 Child feeding adequacy

Child feeding adequacy was assessed using the Minimum Acceptable Diet (MAD) indicator, a measure recommended by the World Health Organization. MAD evaluates minimum dietary diversity and minimum meal frequency in children aged 6–23 months.

Table 4.5 presents the distribution of adequate feeding by the characteristics of the child and respondent. A significant association ($p\text{-value} < 0.001$) was observed between the age of the caregiver and minimum acceptable diet. Furthermore, a significant association ($p\text{-value} = 0.011$) was observed between the employment status of the caregiver and minimum acceptable diet.

Table 4.10: Distribution of adequacy of child feeding by demographic characteristics

Characteristic	Children who met minimum acceptable diet	Children who did not meet minimum acceptable diet	probability – value*
Age of child (in month)			0.740
6 – 11	78 (33.5)	155 (66.5)	
12 – 23	48 (31.8)	103 (68.2)	
Sex of child			0.083
Female	72 (36.9)	123 (63.1)	
Male	54 (28.6)	135 (71.4)	
Age of mother/caregiver (in years)			<0.001
< 20	0 (0)	25 (100.0)	
20 – 29	31 (25.2)	92 (74.8)	
30 – 39	64 (37.9)	105 (62.1)	
40 – 49	24 (41.4)	34 (58.6)	
50 – 59	7 (77.8)	2 (22.2)	
Marital status			<0.001

Single/Never married	5 (12.2)	36 (87.8)
Married/co-habiting	105 (33.6)	208 (66.5)
Separated/widowed/divorced	16 (53.3)	14 (46.7)
Educational level		<0.001
None	9 (16.4)	46 (83.6)
Primary	18 (25.4)	53 (74.7)
Middle/Junior High School	20 (20.4)	78 (79.6)
Senior High School	25 (24.8)	76 (75.3)
/Vocational/Technical		
Tertiary (University, polytechnic etc)	54 (91.5)	5 (8.5)
Occupation		0.011
Unemployed	9 (17.3)	43 (82.7)
Employed	117 (35.2)	215 (64.8)
Place of residence		0.019
Rural	83 (29.3)	200 (70.7)
Urban	43 (42.6)	58 (57.4)

**Fishers exact test*

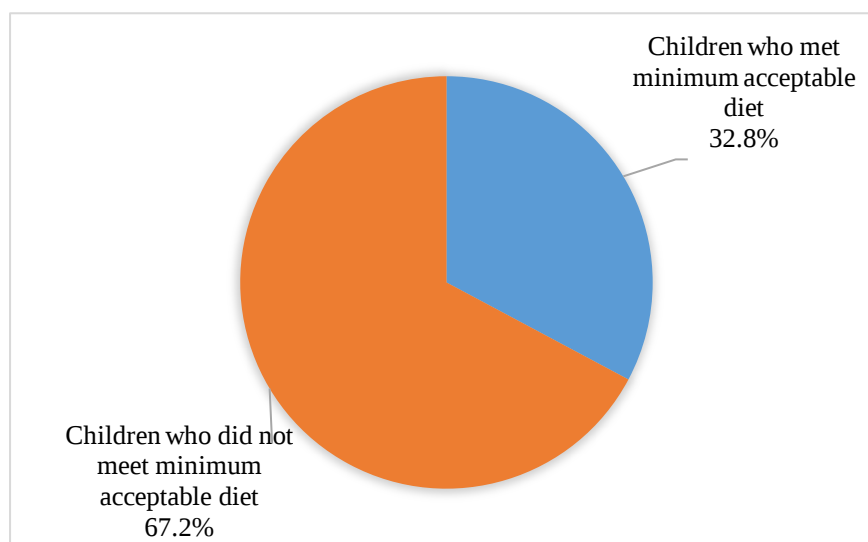
4.5 Infant and Young Child Feeding Indicators

Table 4.6 presents the Infant and Young Child Feeding (IYCF) indicators for 384 respondents. The majority (87.5%) of children were still being breastfed. A greater proportion of the children (72.4%) did not consume infant formula or other animal milk. In terms of complementary feeding, (50.8%) of children were introduced to complementary foods at 6 months. Regarding the frequency of complementary food consumption the previous day, (69%) of children were fed more than twice.

Table 4.6: Analysis of Infants and Young Children feeding practices.

Variable (s)	Frequency (n=384)	Percentage (%)
Child is still being breastfed		
Yes	336	87.5
Child breastfed the previous day		
Yes	333	86.7
Child consumed infant formula or other milks from animals (fresh, powdered)		
Yes	106	27.6
Frequency of child consuming infant formula or animal milk		
Less than 2 times	72	67.9
2 or more times	34	32.1
Age at which complementary food was first introduced to child		
Before 6 months	167	43.5
At 6 months	195	50.8
After 6 months	22	5.7
Frequency of complementary food for the child on previous day		
2 times	119	31
More than 2 times	265	69
Child's consumption of specific foods		
Breastmilk	333	86.7
Eggs	191	49.7
Meat/fish	285	74.2
Staple foods	382	99.4
Pulses/Nuts	151	39.3
Vitamin A rich fruits and vegetables	134	34.8
Other fruits and vegetables	209	54.4
Dairy products	18	4.6
Child was given drinks containing sugar		
Yes	155	40.4
Child's consumption of snacks		
Candies/Sweets	33	8.6
Cakes/Pastries/biscuits	121	31.5
Instant noodles/sausage	24	6.3
None of the above	206	53.7

Figure 4.1 presents proportions of children who met minimum acceptable diet and those who did not meet it.



4.6 Respondents' time use

This section of the study assessed the time use of the respondents in the areas of feeding, doing household chores (including meal preparation), religious activities, paid work and other activities. The result is presented in Table 4.7. It was observed that the mothers used an average of 90.3 minutes with a minimum of 12 and a maximum of 140 minutes in feeding their children.

Table 4.7: Distribution of respondents' time use for a 24 hour period

Time spent (in minutes)	Rural <i>n</i> (%)	Urban <i>n</i> (%)	Total <i>n</i> (%)	Mean	Min	Max
Feeding				90.3	12	140
<=90	190 (67.1)	61 (60.4)	251 (65.4)			
>90	93 (32.9)	40 (39.6)	133 (34.6)			
Chores				154.4	90	190

<=120	64 (22.6)	28 (27.7)	92 (24.0)			
>120	219 (77.4)	73 (72.3)	292 (76.0)			
Religious activity				50.4	15	450
<=60	231 (81.6)	83 (82.2)	314 (81.8)			
>60	52 (18.4)	18 (17.8)	70 (18.2)			
Paid work				195.3	0	510
<=120	20 (7.1)	6 (5.9)	26 (6.8)			
>120	263 (92.9)	95 (94.1)	358 (93.2)			
Other activities				949.6	445	1220
<500	1 (0.4)	0 (0)	1 (0.3)			
500 – 999	261 (92.2)	91 (90.1)	352 (91.7)			
1000 and above	21 (7.4)	10 (9.9)	31 (8.1)			

Feeding: Time spent directly feeding the child, which includes sitting with the child, encouraging them to eat, and ensuring they consume the right amount of food. It excludes food preparation, kitchen cleaning etc .

Chores: Household maintenance activities such as cooking, cleaning, laundry, kitchen cleaning and care for other dependents besides the child.

Religious activity: Participation in religious practices, including prayer, church services, mosque attendance, or religious gatherings.

Paid work: Engagement in income-generating activities, whether formal employment, trading, farming, or self-employment.

Other activities: This category encompasses leisure, sleep, rest, personal care, transportation, and any other tasks not classified under the primary categories above.

Table 4.8 presents the association between time spent feeding the child and of adequacy of feeding. Although (38.4%) of children who were adequately fed came from the group with more feeding time, there was **no significant** (p value = 0.093) relationship between feeding time and child meeting adequate feeding.

Table 4.8: Association between child feeding time and child meeting adequate feeding

	Children who met minimum acceptable diet	Children who did not meet minimum	probability-value
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	n (%)	acceptable diet n (%)	
Time (in minutes)			0.093
0 – 90	75 (29.9)	176 (70.1)	
90 and above	51 (38.4)	82 (61.7)	

4.7 Factors associated with adequate child feeding.

Factors influencing adequate child feeding were further explored and are presented in Table 4.9. The findings of the study showed that the odds of a child receiving adequate food was 15.3 times among those with tertiary level of education (aOR=15.3, 95% CI 3.5 to 66.9, $p<0.001$) compared to those without formal education. Furthermore, the odds of a child receiving adequate food was 2.6 times more among those employed (OR=2.60, 95% CI 1.22 to 5.53, $p=0.013$) compared to those unemployed.

Table 4.9: Factors associated with adequate child feeding

Exposure	Odds Ratio (95% Confidence Interval)	probability – value	Adjusted Odds Ratio (95% Confidence Interval)	probability – value
Age of child (in months)				
6 – 11			<i>reference</i>	
12 – 23	0.93 (0.60, 1.44)	0.731	1.16 (0.64, 2.11)	0.624
Sex of child				
Female				
Male	0.68 (0.44, 1.05)	0.082	1.15 (0.65, 2.05)	0.631
Age of mother/ caregiver				

<20			<i>reference</i>	
20 – 29	0.10 (0.02, 0.49)	0.005	0.16 (0.03, 0.97)	0.046
30 – 39	0.17 (0.04, 0.87)	0.033	0.27 (0.05, 1.44)	0.123
40 – 49	0.20 (0.04, 10.6)	0.058	0.21 (0.03, 1.28)	0.090
50 – 59	-	-	-	-
Marital Status				
Single			<i>reference</i>	
Married/co-habiting	3.63 (1.38, 9.55)	0.009	0.89 (0.30, 2.62)	0.829
Separated/Widow/Divorced	8.23 (2.53, 26.8)	<0.001	1.07 (0.25, 4.63)	0.926
Educational Level				
None			<i>reference</i>	
Primary	1.74 (0.71, 4.24)	0.226	1.71 (0.57, 5.12)	0.338
Middle/Junior High School	1.31 (0.55, 3.12)	0.541	1.33 (0.45, 3.95)	0.604
Senior High School/Vocational/Technical	1.68 (0.72, 3.92)	0.229	0.91 (0.26, 3.21)	0.881
Tertiary	55.2 (17.2, 176)	<0.001	15.3 (3.50, 66.9)	<0.001
Occupation				
Unemployed			<i>reference</i>	
Employed	2.60 (1.22, 5.53)	0.013	1.14 (0.42, 3.06)	0.799
Place of residence				
Rural			<i>reference</i>	
Urban	1.79 (1.12, 2.86)	0.016	1.73 (0.82, 3.63)	0.148
Cooking fuel				
Liquified Petroleum Gas			<i>reference</i>	
Charcoal/firewood	0.28 (0.18, 0.44)	<0.001	1.17 (0.52, 2.61)	0.705
Availability of food market				
Not available			<i>reference</i>	
Available	1.08 (0.70, 1.66)	0.738	0.56 (0.26, 1.22)	0.143
Source of information on feeding				
Family/friends			<i>reference</i>	

Health worker	10.5 (1.39, 79.4)	0.023	5.10 (0.53, 49.4)	0.160
Health facility				
Community Health Planning Services compound			<i>reference</i>	
Health centre	1.78 (0.74, 4.25)	0.195	1.59 (0.56, 4.50)	0.386
Hospital/Polyclinic	7.11 (3.0, 16.8)	<0.001	2.83 (0.93, 8.61)	0.066
Food security				
Insured			<i>reference</i>	
Secured	6.98 (3.91, 12.5)	<0.001	7.22 (2.60, 20.1)	<0.001
Time for feeding (in minutes)				
<=90			<i>reference</i>	
>90	1.46 (0.94, 2.27)	0.094	1.37 (0.75, 2.51)	0.310
Time for chores (in minutes)				
<=120			<i>reference</i>	
>120	1.08 (0.65, 1.79)	0.763	1.49 (0.79, 2.81)	0.218
Time for religious activity (in minutes)				
<=60			<i>reference</i>	
>60	1.17 (0.68, 2.02)	0.568	1.03 (0.48, 2.21)	0.931
Time for work (in minutes)				
<=120			<i>reference</i>	
>120	0.77 (0.34, 1.74)	0.527	0.53 (0.20, 1.44)	0.215

OR: Univariate logistic regression; aOR: multivariate logistic regression



CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter interprets the findings of the study in relation to the objectives; 1. To determine total time caregivers, spend on feeding in a day, 2. Determine the relationship between the time caregivers spend on feeding and the adequacy of infant and young child feeding practices, 3. To determine the factors that are associated with adequate child feeding. The primary aim was to determine the association between the time caregivers allocated to feeding and the adequacy of infant and young child feeding practices (IYCF) among children aged 6–23 months.

5.2 CHILD FEEDING TIME AND ADEQUACY OF FEEDING

While the study found that (38.4%) of adequate feeding among caregivers who spent more time feeding, this association was not statistically significant ($p = 0.093$). This result echoes findings from Kim et al. (2011), which suggest that while longer feeding times may provide more opportunities for responsive and diversified feeding, time alone is insufficient without concurrent factors such as food variety, availability, and caregiver knowledge. Also Time spent on feeding does not automatically translate to nutritionally adequate feeding. A caregiver may spend over 90 minutes feeding a child, but offer low-diversity, nutrient-poor foods (e.g., only porridge or starchy staples), Lack knowledge on age-appropriate portion sizes or meal frequency, Engage in passive or distracted feeding, where the child is left alone or forced to eat. As such, quality of time (e.g., responsive feeding, type of foods provided) may be more critical than the quantity of time (Black & Aboud, 2011). Moreover the hypothesis of this study was not validated because, the measurement of time was based on self-reported 24-hour recall, which is susceptible to: recall bias, especially among busy caregivers,

social desirability bias, where caregivers over reported feeding time to align with perceived expectations, Lack of differentiation between active feeding and passive supervision during meals.

Many caregivers in Ga West are involved in informal employment sectors, where flexible schedules may allow more time with their children, yet this flexibility does not necessarily translate into better feeding practices. Oloo and Parkes (2021) similarly observed that informal work may not ensure adequate income or knowledge of child nutrition, limiting the benefits of available time.

5.3 SOCIO DEMOGRAPHIC AND ECONOMIC DETERMINANTS

Educational level had a strong positive influence on feeding adequacy. Caregivers with tertiary education were significantly more likely to provide adequate feeding (aOR = 15.3, $p < 0.001$). This aligns with previous studies that established that educated mothers are more knowledgeable about IYCF recommendations and have better access to diverse food sources (Nguyen et al., 2014).

Although employment status initially appeared associated with feeding adequacy ($p = 0.011$), it was not significant after adjusting for confounders. This may be attributed to the diversity in employment types (formal vs. informal), suggesting that employment quality matters more than employment status (Oloo, J., & Parkes, H. (2021).

5.4 FEEDING PRACTICES AND INDICATORS

Despite high breastfeeding rates (87.5%) and relatively high frequency of complementary feeding (69% fed more than twice daily), only (32.8%) of children met adequate feeding. This reflects a similar pattern reported in national and sub-Saharan African countries like

Ethiopia, Democratic Republic of Congo and Uganda where adequate feeding remains suboptimal (Gatica-Dominguez et al., 2021; White et al., 2017).

Consumption of nutrient-dense food groups such as dairy (4.6%), vitamin A-rich fruits (34.8%), and legumes (39.3%) was relatively low. The low consumption of dairy products, like milk, cheese, and yogurt, highlights a concerning trend in children's diets. These dairy products are essential sources of calcium, protein, and other nutrients crucial for growth and development (WHO 2008). Similarly, the inadequate intake of vitamin A-rich fruits, such as oranges, carrots, and mangoes, raises concerns about the lack of essential vitamins and antioxidants in children's diets. Vitamin A is vital for vision, immune function, and overall health. This finding resonates with UNICEF (2020) global estimates, which indicate that most children in low-resource settings lack dietary diversity.

5.5 HOUSEHOLD FOOD SECURITY

Food security, as highlighted by research, plays a crucial role in determining the adequacy of child-feeding practices (OR=6.98, $p<0.001$). Over (62%) of households were food secure, yet a significant portion of children in food-secure households still failed to meet dietary requirements. This suggests that food availability alone does not ensure nutritional adequacy.

In this study, a higher proportion of respondents reported eating less than they thought they should (26.8%) compared to those who had to skip a meal (11.2%). at first glance this may seem contradictory, this discrepancy is supported by evidence from prior research that emphasizes the subjective and socially conditioned nature of food insecurity reporting. Eating "less than you thought you should" is a subjective perception that may reflect feelings of inadequacy in portion sizes or meal satisfaction, without necessarily resulting in

a skipped meal. This perception can be influenced by personal expectations, cultural norms around meals, or care giving responsibilities (Coates et al., 2007). In contrast, skipping a meal is a more concrete and severe behavior that individuals may under report due to stigma, shame, or reluctance to admit to extreme deprivation (Kuku et al., 2011). Additionally, social desirability bias may lead respondents to minimize the extent of their hardship, particularly when it involves severe food deprivation.

Furthermore, the high percentage reporting reduced food quantity suggests a coping strategy where households stretch food supplies to avoid skipping meals altogether. This behavior aligns with studies showing that caregivers often reduce their own intake to protect children or prioritize small portions over meal omission (Maxwell et al., 2014).

This finding underscores the importance of ensuring that households have access to an adequate and diverse food supply to meet the nutritional requirements of children. It aligns with earlier studies by Headey et al. (2012) and Saaka et al. (2016) that emphasized the link between household food security and the quality of child feeding. For instance, children residing in food-secure households are more likely to have consistent access to nutritious meals, including a variety of fruits, vegetables, proteins, and whole grains. This availability of diverse food options contributes to meeting the essential nutrient needs of growing children, supporting their overall health and well-being. Furthermore, when families have reliable access to food, it reduces the risk of children experiencing hunger or malnutrition, promoting their physical and cognitive development (UNICEF (2019)).

5.6 OTHER FACTORS ASSOCIATED WITH ADEQUATE CHILD FEEDING

Although children whose caregivers spent more than 90 minutes on feeding were more likely to meet the Minimum Acceptable Diet indicator (aOR = 1.37; 95% CI: 0.75–2.51),

this relationship did not reach statistical significance ($p = 0.310$). This suggests that while prolonged time spent feeding may enhance dietary adequacy, other underlying structural or knowledge-based factors might mediate the effectiveness of time use. This finding aligns with results from Nti & Lartey (2007), who observed that caregiver-child interaction during feeding was crucial, but not sufficient in isolation to guarantee adequate dietary intake unless accompanied by informed food choices and meal quality.

Education level of the caregiver, particularly tertiary education, showed a strong and significant positive association with Minimum Acceptable Diet (aOR = 15.3; 95% CI: 3.50–66.9, $p < 0.001$). This finding is consistent with previous research indicating that educated mothers are more likely to understand and apply recommended infant and young child feeding (IYCF) practices (Senarath et al., 2012). Education likely improves a caregiver's access to nutrition information, decision-making power, and ability to utilize health services effectively.

Food security status was another powerful predictor of adequate feeding, with food-secure households over seven times more likely to meet Minimum Acceptable Diet standards (aOR = 7.22; 95% CI: 2.60–20.1, $p < 0.001$). This supports the finding by Bhutta et al. (2008), who emphasized that food access is a fundamental determinant of child nutrition, regardless of caregiver intent or behavior.

Access to health services, particularly those provided at hospitals or polyclinics, also appeared to support better feeding practices, though this association bordered on significance (aOR = 2.83; 95% CI: 0.93–8.61, $p = 0.066$). Prior studies (Arikpo et al., 2018) have documented the positive role that facility-based counseling can play in improving complementary feeding practices when coupled with regular contact and reinforcement.

In contrast, time spent on chores, religious activities, or paid work showed no statistically significant association with feeding adequacy. This suggests that the quantity of time alone may not be as critical as the quality of time spent with the child, and underscores the importance of context—such as maternal knowledge, household food availability, and access to support services. Children in urban households had higher odds of meeting MAD, though not statistically significant in the adjusted model. Urban environments may offer better access to diverse foods and health services but can also present challenges such as time constraints for working mothers (Arimond, M., & Ruel, M. T. (2004).

The use of Liquefied Petroleum Gas (LPG) for cooking was more common in urban areas and initially showed a significant association with feeding adequacy in bivariate analysis. This may suggest that ease of food preparation plays a role in meal diversity, as supported by Arimond and Ruel (2004), who noted that time constraints due to cooking fuel type influence the quality of complementary feeding.

In a study conducted by Stewart et al. (2013), it was highlighted how caregivers who are well-informed about nutrition are better equipped to make informed decisions regarding their children's dietary needs. For instance, caregivers who understand the importance of a balanced diet are more likely to provide meals that meet the nutritional requirements of growing children, ensuring they receive the necessary vitamins and minerals for optimal growth and development.

5.7 LIMITATIONS OF THE STUDY

Recall Bias: The 24-hour dietary recall and time-use data depended on caregiver memory, which may not reflect actual patterns. Caregivers play a crucial role in providing accurate information about dietary intake and time allocation for children under their care. However,

human memory is subject to biases and limitations, which can impact the reliability of the data collected through recall methods. For instance, caregivers may unintentionally omit certain meals or activities from their reports, leading to an incomplete picture of the individual's daily routine. Additionally, memory recall can be influenced by various factors such as stress, distractions, and personal interpretations, further complicating the accuracy of the data.

Cross-sectional Design: The study design limits causal interpretation.

It presents certain limitations when it comes to establishing causality. This design involves collecting data at a single point in time from a group of participants, making it challenging to determine the direction of causation between variables. This is because the design does not account for the temporal sequence of events or control for confounding variables.

Feeding Time Categorization: The cut-off of 90 minutes may not capture the full spectrum of feeding behaviors. The 90-minute threshold may overlook certain dietary preferences or constraints that children may have. For sick children and those exhibiting selective eating habits, their feeding intervals may diverge considerably from the conventional time frames.

Proportion of Time Spent Feeding: The study was unable to provide an analysis on the proportion of total caregiver time allocated specifically to feeding due to methodological limitations. Moreover, the absence of a standardized measurement tool for assessing caregiver activities further complicated the analysis. Differentiating between feeding-related tasks and non-feeding tasks within the child-care spectrum proved to be a complex endeavor without a universally accepted framework for classification.

Treating Time Use Variables Independently

In this analysis, time spent on each daily activity was modeled to assess its association with child feeding adequacy. This approach assumes time allocated to one activity is independent of time spent on others, like chores or paid work, which does not align with caregivers' practical realities where time is finite.

Increased time for one activity reduces time for others, potentially affecting child nutrition outcomes. This assumption can obscure trade-offs between competing demands on caregivers' time, leading to unreliable estimates in multivariate models.



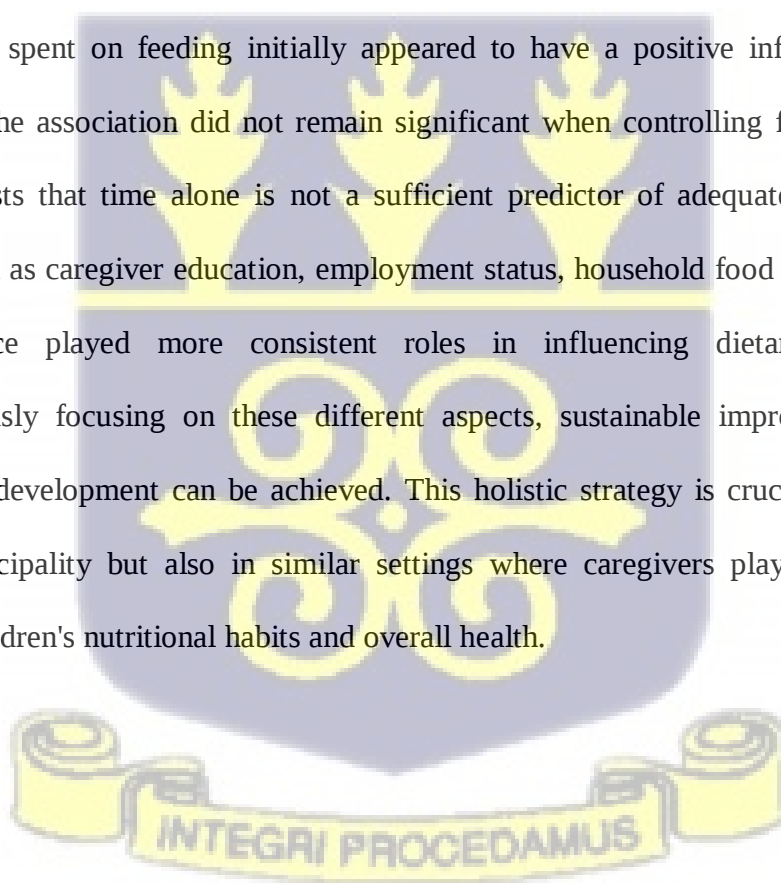
CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

This study set out to examine the association between the amount of time caregivers allocate to feeding and the adequacy of infant and young child feeding practices among children aged 6–23 months in the Ga West Municipality of Ghana. The findings underscore a complex interplay between time availability, socio-demographic characteristics, household food security, and feeding practices.

While time spent on feeding initially appeared to have a positive influence on feeding adequacy, the association did not remain significant when controlling for other variables. This suggests that time alone is not a sufficient predictor of adequate feeding. Instead, factors such as caregiver education, employment status, household food security, and place of residence played more consistent roles in influencing dietary adequacy. By simultaneously focusing on these different aspects, sustainable improvements in child health and development can be achieved. This holistic strategy is crucial not only in Ga West Municipality but also in similar settings where caregivers play a central role in shaping children's nutritional habits and overall health.



6.2 RECOMMENDATIONS

6.2.1 CAPACITY BUILDING FOR HEALTH WORKERS

The Municipal Health Directorate (MHD) should organize periodic in-service training for public health nurses, community health nurses, nutrition officers, and midwives on: Complementary feeding counselling, responsive feeding techniques and implementing dietary diversity using locally available foods. These trainings can be integrated into existing quarterly review meetings to minimize cost.

Health promotion sessions at Child Welfare Clinics (CWCs) should intensify routine sessions for interactive nutrition counselling, focusing on what to feed, how to feed (responsive feeding) and when to feed considering caregivers' daily schedules.

Facilities should conduct regular cooking demonstrations (e.g., once per month) using locally available, affordable foods to show caregivers practical meal preparation methods.

6.2.2 INTENSIFY INTEGRATED IYCF EDUCATION

The Municipal Health Directorate should strengthen Integrated IYCF education by embedding it into ongoing community outreach and CHPS activities.

District nutrition officers should work with public health nurses to develop simple, culturally appropriate nutrition messages that address common misconceptions about child feeding and food diversity.

Collaboration with traditional leaders, opinion leaders, and faith-based organizations should be encouraged to increase acceptance and trust in IYCF messages.

Community health workers should intensify **home visits**, especially to households with children aged 6–23 months, to: reinforce IYCF counselling provided at CWCs, Observe feeding practices and provide individualized feedback . Facilities should use **peer learning approaches**, such as mother-to-mother support groups, to share experiences and encourage adoption of recommended practices

6.2.3 FOOD SECURITY INTERVENTIONS

The Municipal Assembly, in collaboration with the MHD and the Department of Agriculture, should promote **household and community-level home gardening initiatives**, particularly targeting households with young children.

District-led **women's economic empowerment programs**, such as skills training, microcredit schemes, or income-generating activities, should be linked to nutrition education to enhance caregivers' purchasing power and food choices.

Support should be provided to strengthen **local food markets**, ensuring consistent availability and affordability of fruits, vegetables, legumes, and animal-source foods.

6.2.4 FURTHER RESEARCH

Longitudinal Studies: Future studies should track changes in feeding practices over time to assess causal relationships. Researchers can conduct longitudinal studies by following a cohort of participants over an extended period to observe how feeding practices evolve. By tracking these changes over time, researchers can establish correlations between feeding practices and factors such as socio-economic status or cultural influences. This longitudinal approach provides a comprehensive understanding of how feeding practices develop and allows for the identification of potential causes and effects.

Time Diary Methods: Incorporate time diary tools to accurately assess the proportion of time allocated to feeding relative to other tasks. Time diary methods involve participants keeping detailed records of their daily activities, including feeding routines and other responsibilities. By analyzing these time diaries, researchers can quantify the amount of time spent on feeding compared to other activities like employment, household chores, personal time, or sleeping. Integrating time diary tools into research protocols enhances the accuracy and reliability of data on feeding practices and contributes to a better understanding of childcare dynamics.



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APPENDIX I

PARTICIPANTS INFORMATION SHEET

General information

Study Title: Association between caregivers time allocated to child feeding and adequacy of Infant and Young Child feeding of children 6-23 months in Ga West Municipality.

I am **Usamatu Alhassan**, a student in the Department of Population, Family and Reproductive Health at the School of Public Health, University of Ghana, Legon, currently pursuing a Master of Public Health degree. I am accompanied by my research assistants to conduct a survey aimed at evaluating the correlation between caregivers' time devoted to child feeding and the adequacy of infant and young child feeding among children aged 6-23 months in Ga West Municipality of Greater Accra, Ghana. This endeavor is solely for academic purposes and is a fundamental component of the requirements for the attainment of a Master of Public Health Degree. The researcher holds no vested interests in this investigation.

Background of the Study

Optimal infant feeding is critical for the growth, development, and overall well-being of children, particularly during the first two years of life (UNICEF, 2020). The sustenance, growth and maturation of offspring are highly susceptible to the quality and manner of nourishment they receive during infancy up until 23 months of age (UNICEF 2016).

Procedure

The research will entail responding to inquiries from a survey regarding the amount of time caregivers dedicate to feeding their offspring and the sufficiency of infant and toddler feeding among children aged 6-23 months in Ga West Municipality of Greater Accra, Ghana. The data you provide will contribute to the existing knowledge base and recommend necessary interventions.

Possible Risk and Discomfort

There will be a projected minimal risk associated with the forthcoming study. By participating in this research, you will be requested to disclose certain personal information regarding child feeding, which may lead to discomfort in discussing certain topics. You are not obligated to respond to every inquiry or partake in the study if you do not wish to do so. Following the interview, you will have the opportunity to review your answers, and you may request modifications to any responses as desired. Withdrawal from the study does not necessitate providing a reason.

Possible Benefits.

The district health directorate and the municipality where the research will be conducted will integrate the findings into their strategic planning for health education programs and outreach initiatives. Moreover, caregivers will be educated on the WHO guidelines regarding infant and young child feeding, as well as the appropriate methods for optimal feeding.

Additional Costs and Compensation

You will not be required to pay any money to participate in this study, nor will you receive any compensation for your involvement. Should you choose to engage in the study, only a small portion of your time will be needed to respond to the questions presented.

Data Storage and Management

Data gathered for the research will be stored digitally on USB drives, external hard drives, Google Drive, and Dropbox respectively. Additionally, a digital copy will be transmitted to the library of the School of Public Health, University of Ghana. The access password to all electronic storage accounts will be exclusive to the principal investigator. The information retained will be permanently deleted around a year subsequent to the submission and approval of the dissertation by the external examiner.

Confidentiality

No personal identification will be recorded. Your name and identity are not required in the study. Nevertheless, the data you provide will be encrypted and handled with utmost confidentiality. You can be assured of the complete privacy of the information you disclose. With the exception of the researcher and the research supervisor, no other individuals will be granted access to the information shared, whether in part or in its entirety. The data gathered will be securely stored and will be disposed of after a minimum of three years in accordance with the research protocol.

Voluntary participation and right to withdraw.

Participation in this research endeavor is entirely voluntary, granting individuals the liberty to respond to either a portion or the entirety of the questionnaire. At any juncture, they reserve the right to retract their involvement from the study. Additionally, they hold the prerogative to abstain from addressing any queries that may elicit discomfort. Opting out of participation will bear no consequence upon them or the medical institution. Nonetheless, it is strongly recommended that they engage wholeheartedly in this research initiative to enlighten us further.

Dissemination of Results

Findings and suggestions will be accessible at the School of Public Health.

Before Taking Consent

Do you have any questions you wish to ask about the study? Yes/No

If yes, please indicate the questions below

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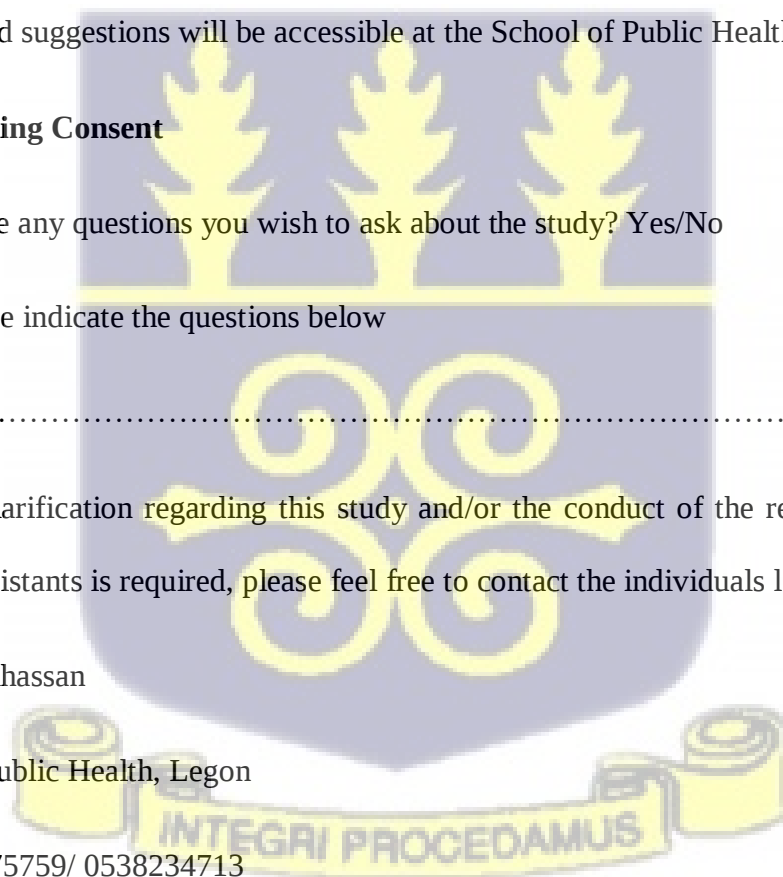
If further clarification regarding this study and/or the conduct of the researcher and research assistants is required, please feel free to contact the individuals listed below.

Usamatu Alhassan

School of Public Health, Legon

Tel: 0243675759/ 0538234713

Email address: usamat640@gmail.com



Mrs. Nana Abena Apatu

The Administrator of the Ghana Health Service Ethics Review Committee

Email: ethics.research@ghs.gov.gh

Tel: 0503539896



CONSENT FORM

Study Title: Association between caregivers time allocated to child feeding and adequacy of feeding of children 6-23 months in Ga West Municipality.

PARTICIPANTS' STATEMENT

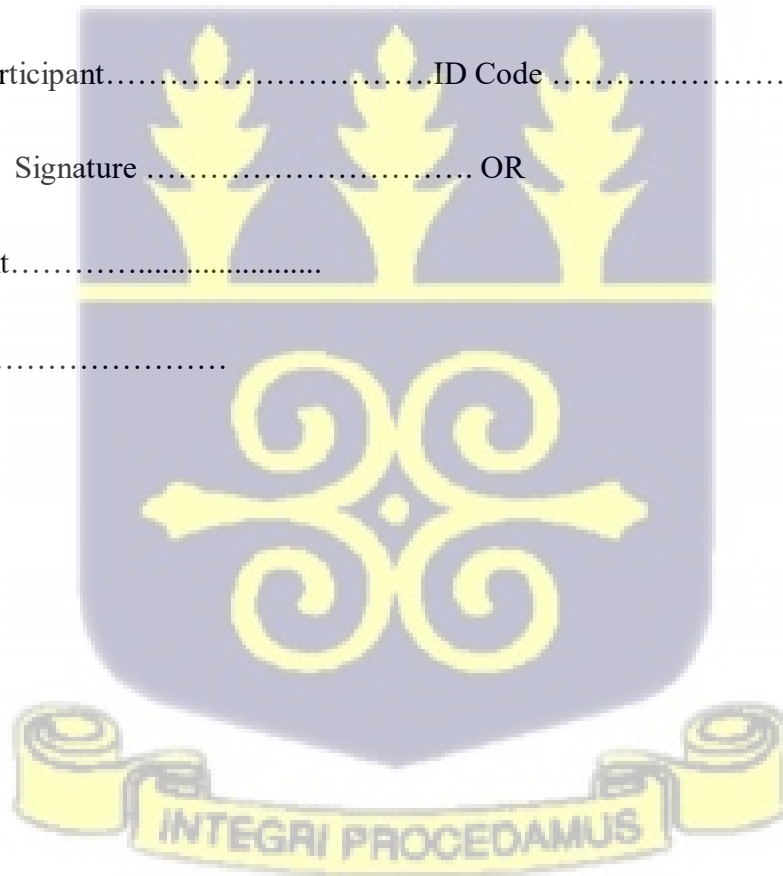
I confirm that I have read the Participants' Information Sheet or have had it explained to me in a language that I comprehend. I have a thorough understanding of the information presented and the potential consequences, as well as the right to withdraw from the study even after signing this document. I willingly consent to participate in this research endeavor.

Name of Participant.....ID Code

Participants Signature OR

Thumb Print.....

Date.....



INTERPRETERS' STATEMENT (where applicable)

I interpreted the purpose and contents of the Participants' Information Sheet to the
aforementioned participant in the..... language of their preference to
ensure complete comprehension. All inquiries, necessary clarifications sought by the
participant, and responses were also accurately conveyed to their satisfaction.

Name of Interpreter.....

Signature of Interpreter.....OR Thumb Print.....

Date:.....

Contact Details.....



STATEMENT OF WITNESS (where applicable)

I was present when the purpose and contents of the Participant Information Sheet were effectively communicated and explained to the participant in the..... language of their preference. I affirm that the participant was afforded the opportunity to pose inquiries and request clarifications, all of which were duly addressed to their satisfaction before willingly consenting to participate in the research.

Name:.....

Signature/Thumb Print Date:.....



INVESTIGATOR STATEMENT AND SIGNATURE

I, the undersigned, have explained this consent to the respondent in English, and the participant has been afforded sufficient time to comprehend the purpose of the study, the procedures to be adhered to, as well as the potential risks and benefits involved. All inquiries and clarifications brought forth by the participant have been duly addressed. The participant has wholeheartedly consented to participate in the study.

Researcher's name.....

Signature

Date.....



STUDY QUESTIONNAIRE

Date of Interview	dd/mm/yyyy			
Questionnaire number				
ID Respondent				
Region				
Sub district				
Community				
SECTION 2: SOCIO-DEMOGRAPHIC/ ECONOMIC CHARACTERISTICS				
Q#	Question	Response	Code	Skip
1	Age of Child (Months)	6-11	1	
		12-23	2	
2	Sex of child	Male	1	
		Female	2	
3	Age of mother/caregiver	< 20 years	1	
		20-30 years	2	
		30-40 years	3	
		If more than 40 years, specify.....		
4	Marital status of mother/caregiver	Single/never married	1	
		Married	2	
		Divorced	3	
		Widowed	4	
		Separated	5	
		Cohabiting	6	
5	Caregiver's highest level of education	No education	1	
		Primary	2	
		Middle/JHS	3	
		SHS/Vocational/ Technical	4	
		University, Teacher training, Nursing training, Polytechnic etc	5	
6	What is the main occupation of the caregiver	Unemployed	1	
		Administrator, health service worker, head of an institution or organization, Lecturer, teacher Accountant, etc)	2	
		Clerical/religious leader	3	
		Sales and services including petty trading	4	
		Skilled manual	5	
		Unskilled manual	6	
		Farmer	7	
		Others (specify)	8	
7	Place of residence	Rural	1	
		Urban	2	
8	What is the main source of drinking water for members of your household	Piped water	1	
		Protected dug well and springs	2	
		Boreholes	3	
		Sachet water	4	
		Public taps	5	

		Rainwater	6	
		Water delivered via tanker truck or a cart with a small tank	7	
		Tube wells	8	
9	Do you own any of the following items in the house?	Television	1	
		Radio	2	
		Mobile phone	3	
		Fan	4	
		Fridge	5	
		Bicycle/motor/car	6	
		Air condition	7	
		Washing machine	8	
10	What kind of toilet facility do members of your household usually use	Flush / pour flush	1	
		Dry pit latrines	2	
		Composting	3	
11	What type of fuel do you use in cooking?	LPG	1	
		Charcoal	2	
		Firewood	3	
		Kerosene	4	

SECTION 3: HOUSEHOLD HUNGER SCALE; During the last 24 hours, was there a time when because of lack of money or any other reason:

1	You were worried you would not have enough food to eat?	No	1	
		Yes	2	
2	You were unable to eat healthy and nutritious food?	No	1	
		Yes	2	
3	You ate only a few kinds of foods?	No	1	
		Yes	2	
4	You had to skip a meal?	No	1	
		Yes	2	
5	You ate less than you thought you should?	No	1	
		Yes	2	
6	Your household ran out of food?	No	1	
		Yes	2	
7	You were hungry but did not eat?	No	1	
		Yes	2	
8	You went without eating for the whole day?	No	1	
		Yes	2	

SECTION 4: INFANT AND YOUNG CHILD FEEDING INDICATORS

Now I would like to ask about foods that the child had yesterday during the day or at night (Do not list for the caregiver)

1	Is your child still breastfeeding?	No	1	
		Yes	2	
2	Did [child's name] breastfeed	No	1	
		Yes	2	
3	Did [child's name] take infant formula or other milks from animals (fresh/powdered/condensed)	No	1	
		Yes	2	

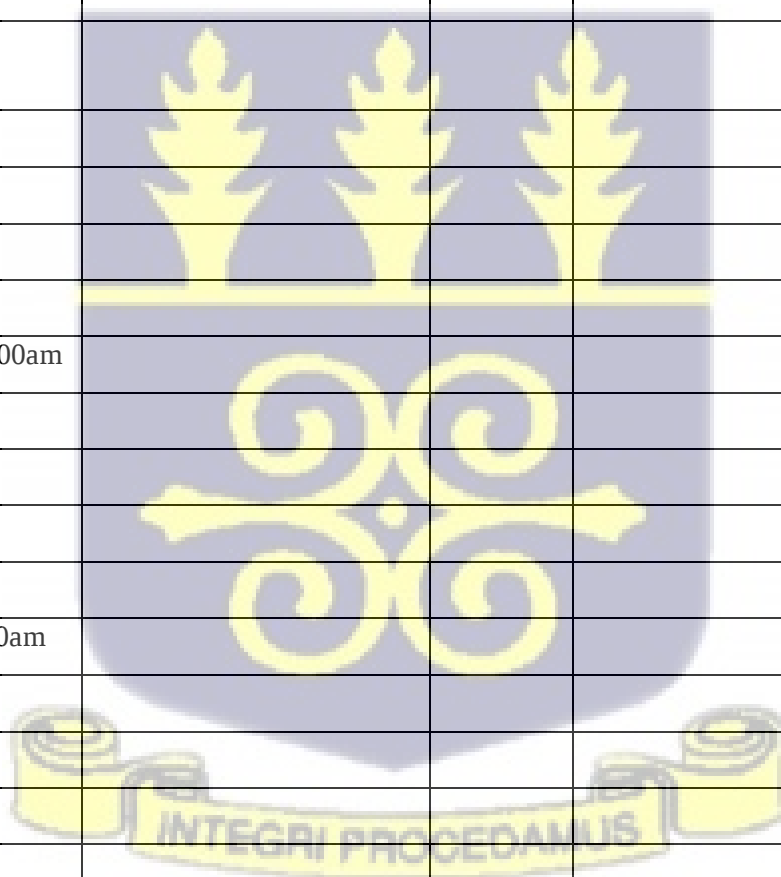
	yesterday?			
4	If “Yes” how many times did your child drink milk?	If 2 or more, record 1	1	
		If less than 2 or not known, record 2	2	
5	How many times did you feed [child’s name] liquid, solid, semi solid foods yesterday?	2 times	1	
		More than 2 times	2	
6	Did your child take any liquid containing sugar like fruit juice, soft drinks, sobolo, tea, milo etc.?	No	1	
		Yes	2	
7	Did your child eat any of the following foods the previous day: chocolate, instant noodles, sausages, cakes, pastries, sweet biscuits, French fries?	No	1	
		Yes	2	
8	Did your child eat any of the following staple foods: potatoes, yam, cassava, bread, rice, banku, kenkey, tuo zaafi, akple, fufu	No	1	
		Yes	2	
9	Eggs?	No	1	
		Yes	2	
10	Any other meat such as lamb, beef, pork, goat, chicken, organ meats (liver, kidney, heart)?	No	1	
		Yes	2	
11	Pulses (Beans, soybeans) nuts and seeds (agushi, Neri)	No	1	
		Yes	2	
12	Fresh fish, dry fish or shellfish?	No	1	
		Yes	2	
13	Dark leafy vegetables like kontonmire, ayoyo, etc?	No	1	
		Yes	2	
14	Dairy products (yogurt, cheese, infant formula)	No	1	
		Yes	2	
15	Fruits like papaya, mangoes, banana, orange etc?	No	1	
		Yes	2	
SECTION 6: CONTEXTUAL FACTORS				
1	Is there a food market available in your community?	No	1	
		Yes	2	
2	Where do you seek for health care services?	Hospital	1	
		Polyclinic	2	
		Health center	3	
		CHPS compound	4	
3	Are you permitted to add meat or egg to [child’s] food?	No	1	
		Yes	2	
4	How do you get information on infant and young child feeding?	Health workers	1	
		Family members	2	
		Media	3	
		Friends	4	

TIME USE QUESTIONNAIRE

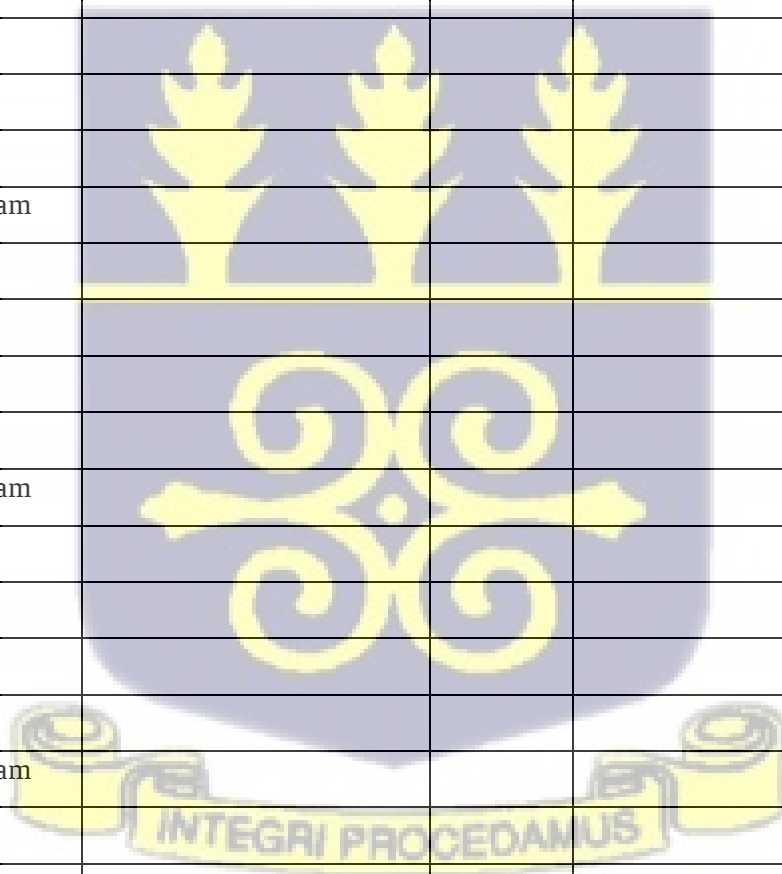
Time Code	Activities(A maximum of 5 activities in an hour)	Activity Code	Duration in minutes	Code
07:00- 8:00am				
8:00- 9:00 am				
9:00- 10:00am				
10:00- 11:00am				
11:00am-12:00pm				
12:00pm-1:00pm				

1:00pm- 2:00pm				
2:00pm- 3:00pm				
3:00pm-4:00pm				
4:00pm-5:00pm				
5:00pm-6:00pm				
6:00pm-7:00pm				
7:00pm-8:00pm				

8:00pm-9:00pm				
9:00pm- 10:00pm				
10:00pm- 11:00pm				
11:00pm-12:00am				
12:00am-1:00am				
1:00am- 2:00am				



2:00am- 3:00am				
3:00am-4:00am				
4:00am:5:00am				
5:00am-6:00am				
6:00am-7:00am				
7:00am-8:00am				



APPENDIX II

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

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


Your Health Our Concern

My Ref: GHS/RDD/ERC/Admin/App/24/577
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-056-5303
Mob: +233-50-3539896
Tel: +233-302-960628
Email: ethics.research@ghs.gov.gh
26th November 2024

Usamatu Alhassan
c/o Farouk Alhassan
P. O. Box Kb 943
Korle Bu

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

GHS-ERC Number	GHS-ERC: 041/09/24
Study Title	Association between Caregivers' Time Allocated to Feeding and Adequacy Of Infant and Young Child Feeding Practices of Children 6-23 Months in Ga West Municipality
Approval Date	26 th November, 2024
Expiry Date	25 th November, 2025
GHS-ERC Decision	Approved

This approval requires the following from the Principal Investigator

- Submission of a yearly progress reports of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months.
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

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

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

SIGNED.....
Mr. Kofi Wellington
(GHS ERC Chairperson)

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

INTEGRI PROCEDAMUS

