Determinants of early childhood growth: a case study of early childhood development (ecd) Project In Nzega District, Tabora Region, Tanzania

Frank Jasper Lyimo, MSc

Master of Public Health Dissertation
Muhimbili University of Health and Allied Sciences
October, 2019

Muhimbili University of Health and Allied Sciences

School of Public Health and Social Sciences

DETERMINANTS OF EARLY CHILDHOOD GROWTH: A CASE STUDY OF EARLY CHILDHOOD DEVELOPMENT (ECD) PROJECT IN NZEGA DISTRICT, TABORA REGION, TANZANIA

By

Frank Jasper Lyimo

A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Public Health of

Muhimbili University of Health and Allied Sciences
October, 2019

CERTIFICATION

The undersigned certify that I have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled; **‘‘Determinants of early childhood growth: A case study of Early Childhood Development (ECD) Project in Nzega District, Tabora region, Tanzania’’,** in (partial) fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

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Dr. Mangi J. Ezekiel

Supervisor

_____

Date

DECLARATION AND COPYRIGHT

I, **Frank Jasper Lyimo,** declare that this **dissertation** is my own original work and that it has not been presented and not be presented to any other university for a similar or any other degree award.

Signature…… **Date**……

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ACKNOWLEDGMENT

This dissertation represents a combined effort of a large number of individuals and it's my pleasure to acknowledge the concerned. I wish to extend my thanks to all staff from the public health distance learning program from Muhimbili university of health and allied sciences and the ECD – centers in nzega district of Tabora region for their support and facilitating me during field data collection.

I would wish to also thank my supervisor, Dr. Mangi J. Ezekiel for his advice, guidance, support, patience and encouragement throughout this whole time to produce this report. Thank you; this report would not have been accomplished without you.

I am very grateful to my fellow course mates, thank you for your advice on making this dissertation a success.

This work could not have been a success without the full support of my beloved wife and my beautiful lovely daughter who tolerated my absence when I was busy with the dissertation. Thank you so very much.

DEDICATION

This work is dedicated to the whole family of Mr. and Mrs Frank Jasper Lyimo for their patience, contribution and support throughout the study period

ABSTRACT

Background: Investing in children's health is one of the smartest investments that a country can make because the effects of poor development in early childhood have life-long consequences not only to the individual child but also adversely impact a country's social and economic development. More than fifty percent of all child deaths under-five years old are due to avoidable diseases or environments surrounding the children (UNICEF 2013).

Objective: To assess the determinants for early childhood growth using evidence from the Early Childhood Development (ECD) Intervention Project implemented by Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) in Nzega District of Tabora Region.

Methodology: This research used a descriptive research design that critically examined and explores determinants for early childhood growth. Both Quantitative and Qualitative research approach were employed in this research. A total of 215 parents/guardians for the selected child were invited to participate in this study and purposefully one caregiver from each EGPAF children center invited to participate in this study.

Results: Quantitative findings indicate that dietary deficiencies (χ=48.806 p=0.000) and whether mother ever had chronic diseases (χ=13.326 p=0.004) during pregnancy has a significant association with child growth, On the other hand, food availability (χ=48.806,p=0.000), household size (χ=14.746,p=0.022) were statistically associated with child growth. Qualitative findings show that the majority of Health Care Workers and community health workers were on the opinion that household poverty, household's surroundings, poor hygiene environment, and intra-households factors influence child growth.

Conclusion: Chronic disease, dietary during pregnancy has been significantly associated with child growth. Household size, food availability were also statistically associated with child growth after pregnancy. Household poverty, household surroundings, poor hygiene environment, and intra-households were determined as socio-environmental factors that influence child growth. Arguably, these factors are very crucial as far as child well-being concerned hence ECD interventions at the community level can help improve the situation by providing support and education to parents and guardians and the community in large.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CCD	Care for Child Development
CHMT	Council Health Management Team
ECD	Early Childhood Development
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
FAS	Foetal Alcohol Syndrome
GNH	Gross National Happiness
HIV	Human Immuno-deficiency Virus
INA	Indirect Method of Nutritional Assessment
IRB	Institutional Review Board
MOH	Ministry Of Health
MOHSW	Ministry of Health and Social Welfare
NGOs	Non-Governmental Organizations
SSA	Sub Saharan Africa
STDs	Sexually Transmitted Diseases
STI	Sexual Transmitted Infections
WHO	World Health Organization

DEFINITION OF TERMS

The following terms intend to conceptual definitions that were used in this study.

(i) A Child

The United Nations Convention on the Rights of the Child, 1979, defines a child as a person younger than 18 years**.** Under the Tanzania law, everyone under 18 years old is regarded as a child, all children in Tanzania are protected by the Law of the Child Act 2009 (NBS, 2012)

(ii) Orphans and Vulnerable Children (OVC)

According to the National, Social Protection ministry in Tanzania vulnerable children are defined as those children who are adversely affected by the lack of accessing basic social services as well as all children who are at risk of not receiving basic social services including education (NBS 2012; REPOA 2008). A vulnerable child in this regard is considered as being under the age of 18 years and currently at high risk of lacking adequate care and protection.

(iii) Optimal Child Growth

Child growth refers to physical growth such as increases in height and weight and other body changes that happen as kids mature from the time of birth throughout her childhood. The WHO proposed the child growth standards such as, (i) Length/height-for-age, (ii) weight-for-age, (iii) weight-for-length (iv) Weight-for-height and (v) body mass index-for-age: World Health Organization, (2006)

(iv) Early Childhood Growth

This referrer to physical and biological progress between birth up to age three (3) years. Physical growth refers to an increase in body size (length or height and weight) and in the size of organs. From birth to about age 3 years, children grow rapidly. Early Childhood Growth (ECG) is a time of tremendous physical growth of the baby after this time, growth slows. As growth slows, children need fewer calories and parents may notice a decrease in appetite physically, between birth and age three a child typically doubles in height and quadruples in weight.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

1.1.1 Early childhood growth

Investing in children is one of the smartest investments that a country can make because the effects of poor development in early childhood have life-long consequences not only to the individual child but also adversely impact a country's social and economic development. More than fifty percent of all child deaths under-five years old are due to environments surrounding the children being, avoidable diseases, environmental surrounding the child, culture, socio-economic and home surroundings (UNICEF 2013). According to the World Health Organization (2016), the following are basic areas for child growth; increases in height and weight and other body changes that happen as kids mature from the time of birth throughout her childhood. An average-sized baby is 50 cm long at birth and grows three times by age one. The WHO proposed the child growth standards such as, (i) Length/height-for-age, (ii) weight-for-age, (iii) weight-for-length, (iv)weight-for-height (v) body mass index-for-age (World Health Organization, 2006)

While there are some factors, such as genetics, which are out of our control, dietary, medical and environmental factors are within our control. Nutrition to mothers is important before and during pregnancy and is the most influential non-genetic factors in fetal development. According to Graham *et al* (2007), women with preconception healthy Body Mass Index (BMI) tend to gain an appropriate amount of weight during pregnancy and women with BMI below 19.1 have fivefold increased in delivering low birth weight baby. Maternal undernutrition is a risk factor for fetal growth restriction and adverse perinatal outcomes (ibid).

Children during the early years of age undergo through rapid growth and development that is greatly influenced by the following factors; exclusive breastfeeding, adequate complementary feeding, vaccinations, safe environment, and care need to be ensured for optimum physical,

social and cognitive development and to prevent to adverse impacts on short-term survival as well as long-term health and development. Various literature suggests that nutrition, household economy and socio-cultural is the most important factor in their early hood growth (WHO 2016). Responsibility of child-rearing and early childhood education in many parts of developing countries has remained in the hands of individual families and communities without a proper and competent institution to provide for their continued needs of education. In this regard, most of the families that face daily challenges because of their socio-economic disadvantages are nevertheless able to create the essential nurturing environments for their children (Arjumand *et al* 2007; WHO 2016; UNICEF 2014).

Early childhood growth can be compromised by a number of direct adverse experiences during the prenatal and postnatal periods (Hertzman, 2010; Glewwe*et al at* 2001 and WHO 2016). Adverse experiences known to be associated with later negative outcomes include sustained poverty; recurrent physical, emotional or sexual abuse; emotional or physical neglect; parental alcohol or drug abuse; an incarcerated household member; homelessness; parental depression, suicidality or mental illness; and family violence and diseases (WHO 2016).

In Tanzania, Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) and other partners are leading global efforts to end preventable child deaths, working with governments, national and international agencies, and civil society to support effective and life-saving actions at each phase in a child's life from prenatal care in a mother's pregnancy to effective and affordable health care through childhood and into adulthood**.** Since 1988, EGPAF has helped to achieve virtual elimination of over 50% new infections in children worldwide (PEPFAR, 2015). EGPAF has a global footprint reaching over 8,000 sites in 15 countries with a particular focus on sub-Saharan Africa (Ibid).

1.1.2 Child wellbeing programs in Tanzania

Within the last 15 years, and particularly since 2000, Child wellbeing programs in Tanzania has come a long way (Bakuza, 2010; PEPFAR, 2015). The success of the various Early Childhood Development (ECD) initiatives implanted by various organization like UNICEF, UNESCO, World Bank and EGPAF,The Aga Khan Foundation (AKF) has been implementing various projects which aim at improving Early Childhood Development sector in Tanzania for three decades (The Aga Khan Foundation 2017,UNESCO 2017) Aga Khan Foundation AKF has pioneered the provision of high quality, culturally-relevant and holistic early childhood development amongst communities in various regions in Zanzibar and Southern Tanzania. The program focuses on transforming the quality of life of young children and their families, building strong institutions, leaders, and professionals, and contributing to networks, research, and policy. Through its Madrasa Early Childhood Programme, over 10,000 children, 50 percent of them benefit from the current support to 81 community-based preschools in Zanzibar (ibid). AKF is also giving increasing attention towards supporting children under the age of three, focusing on better parenting and caregiver interventions. In 2017, AKF and the Madrasa Early Childhood Programme in Zanzibar embarked on a partnership to deliver professional development to 900 teachers across 400 preschools while assisting the Ministry of Education and Vocational Training to mainstream the community-based pre-schooling approach (The Aga Khan Foundation 2017).

In addition, the EGPAF's Early Childhood Development (ECD) Project, commonly known as the Malezi Project, supports the integration provision of supplements and vaccines for maternal, newborn, and child health (MNCH), prevention of mother-to-child transmission of HIV (PMTCT) and CTC services at 47 EGPAF-supported sites in 3 districts (Nzega, Igunga, and Tabora Municipal) in the Tabora region (PEPFAR, 2015). The goal is to increase the likelihood that HIV-infected and affected children reach their full cognitive, social, emotional, physical, and development potential. The project uses the Care for Child Development (CCD) package to support Health Care Workers in play and communication activities with their children. EGPAF works closely with the Ministry of Health, Community Development,

Gender, Elderly and Children (MOHCDGEC) at national, regional and district levels in ensuring quality provision of supplements and vaccines in health facilities and communities. EGPAF provides technical support to the ministry for the adaption of national CCD package (PEPFAR, 2015).

As the interventions started in Tabora region, i.e. three districts Nzega, Igunga, and Tabora Municipal, the project focused more on providing technical support to trained personnel to ensure quality counseling steps are followed when working with child Health Care Workers. On top of that, EGPAF worked with the MOHCDGEC through the Social Welfare Department to orient 100 health providers and 300 CHWs on using locally available resources to develop age-appropriate play material within the project catchment area.

To ensure sustainability, through project implementations CHWs should be transferring knowledge and good practices to the community (Cole *at al* 2000). CHWs in Nzega, Igunga, and Tabora Municipal have continued conducting home visits to households at the community, again focusing on children under five who are at risk. CHWs follow the MNCH household visit guidelines to provide health-related support in the households. In addition, CHWs promotes supplements and vaccines with an emphasis on the importance of play and communication. The CHW during household visits take Anthropometric measurements, including length or height, weight, and head circumference, in assessing early childhood growth, help providers determine if a child is growing properly and can indicate when the child's health and well-being are at risk. Additionally, anthropometric measurements assist the CHW in selecting appropriate treatment options for children and adolescents among children served under the Malezi Project in Nzega, Igunga, and Tabora Municipal within Tabora Region.

1.2 Problem Statement

The first three years of life span from the day of conception is considered the most important growth phase for a child (WHO 2016). Early childhood growth includes the physical and biological growth of the child. What happens to the child in these early days has an immense impact on the child's wellbeing in the latter part of adulthood. Most of the children failing to reach their potential in both health and social development are living in sub-Saharan African countries (Grantham-McGregor et al 2017, WHO 2016, Rosenzweig, 2011 and UNICEF, 2014).

Various literature (Grantham-McGregor et al 2017; PEPFAR, 2015) suggested that certain genetic disposition plays a role, but external factors are of paramount to child growth, these include exclusive breastfeeding, adequate complementary feeding, supplements and vaccines, safe environment, and childcare, in fact, these need to be ensured for optimum child growth for adverse impacts on short-term survival as well as long-term child health. Various interventions have been made to improve childhood wellbeing in Tanzania, this study intends to add knowledge on determinants of early childhood growth using experiences from the EGPAF's Early Childhood Development (ECD) Project at Nzega district in the Tabora region.

1.3 Research questions

i. What are the factors associated with childhood growth during pregnancy in Nzega districts?
ii. What are the factors associated with childhood growth after pregnancy in Nzega district?
iii. How do external factors influence childhood growth in Nzega districts?

1.4 Research Hypothesis

The following hypothesis is considered and set in this study;

Null Hypothesis

H1: There is no significant association between nutritional and behavioral factors during pregnancy and optimal childhood growth

H2: There is no significant association between dietary and health factors after childbirth and optimum childhood growth

H3: There is no significant association between external factors and childhood growth

Alternative Hypothesis

H1: There is a significant association between nutritional and behavioral factors during pregnancy and optimum childhood growth

H2: There is a significant association between dietary and health factors after childbirth and optimum childhood growth

H3: There is a significant association between external factors and optimum childhood growth.

1.5 Objectives of the study

1.5.1 Broad Objectives

To assess the determinants for early childhood growth using evidence from early childhood development (ECD) intervention project implemented by EGPAF in Nzega District of Tabora Region.

1.5.2 Specific Objectives

Specifically, this study intends to;

i. To assess factors associated with optimum childhood growth during pregnancy in Nzega districts
ii. To assess factors associated with optimum childhood growth after pregnancy in Nzega district
iii. To determine environmental factors influences optimum childhood growth in Nzega districts.

1.6 Rationale of the Study

The study added new and relevant knowledge to the available collection of literature on determinants for early childhood growth. This study adds more knowledge on issues that can compromise direct adverse on child well being during the prenatal and postnatal periods .in addition to that, household surroundings factors that identified to be associated with later negative outcomes include sustained poverty; recurrent physical, emotional or sexual abuse; emotional or physical neglect; parental alcohol or drug abuse; an incarcerated household member; homelessness; parental depression, suicidality or mental illness; and family violence and diseases (WHO 2016) as far as school children, mothers and community at large are concerned.

In Tanzania, Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) and other partners are leading global efforts to end preventable child deaths, working with governments, national and international agencies, and civil society to support effective and life-saving actions at each phase in a child's life from prenatal care in a mother's

The study provided valuable information for EGPAF projects in Nzega District of Tabora, dealers, health services providers, donors and all other stakeholders involved in early childhood growth and well being in Tanzania.

1.7 Conceptual framework

Children are dependent on their household, communities, home environments, the fact that the state of realization of their rights is minimal, they normally fall under the risk of vulnerability to challenges associated with optimal child growth. The fulfillment of children's rights requires an enabling environment from conception to the end of adolescence. A lot of children in Tanzania do not reach their full potential in optimal child growth. Nutrition is important before and during pregnancy and is the most influential non-genetic factors for child growth.

External factors like health associated with poverty, nutrition, economic and social factors hinder from attaining to their full growth potential. Other factors that compromise overall growth during pregnancy and after birth are parent's behavioral, dietary deficiencies, chronic infections, exclusive breastfeeding, inadequate feeding practices and inadequate provision of supplements and vaccines, this includes both macro and micronutrients which are essential for normal growth of the child (Grantham-McGregor *et al* 2017; World Bank (2010), Rosenzweig 2011; UNICEF, 2014).

The conceptual framework (Figure 1), assumes those factors as independent variables. While child physical growth measured using BMI was considered as a dependent variable. Child growth interventions centers like the one currently implemented by EGPAF's-ECD Project, commonly known as the Malezi Project centers, are used as a case study as it supports the provision of supplements and vaccines into childcare, health, nutrition, and education to ensure child growth in Nzega district, Tabora region. The conceptual framework is shown below;

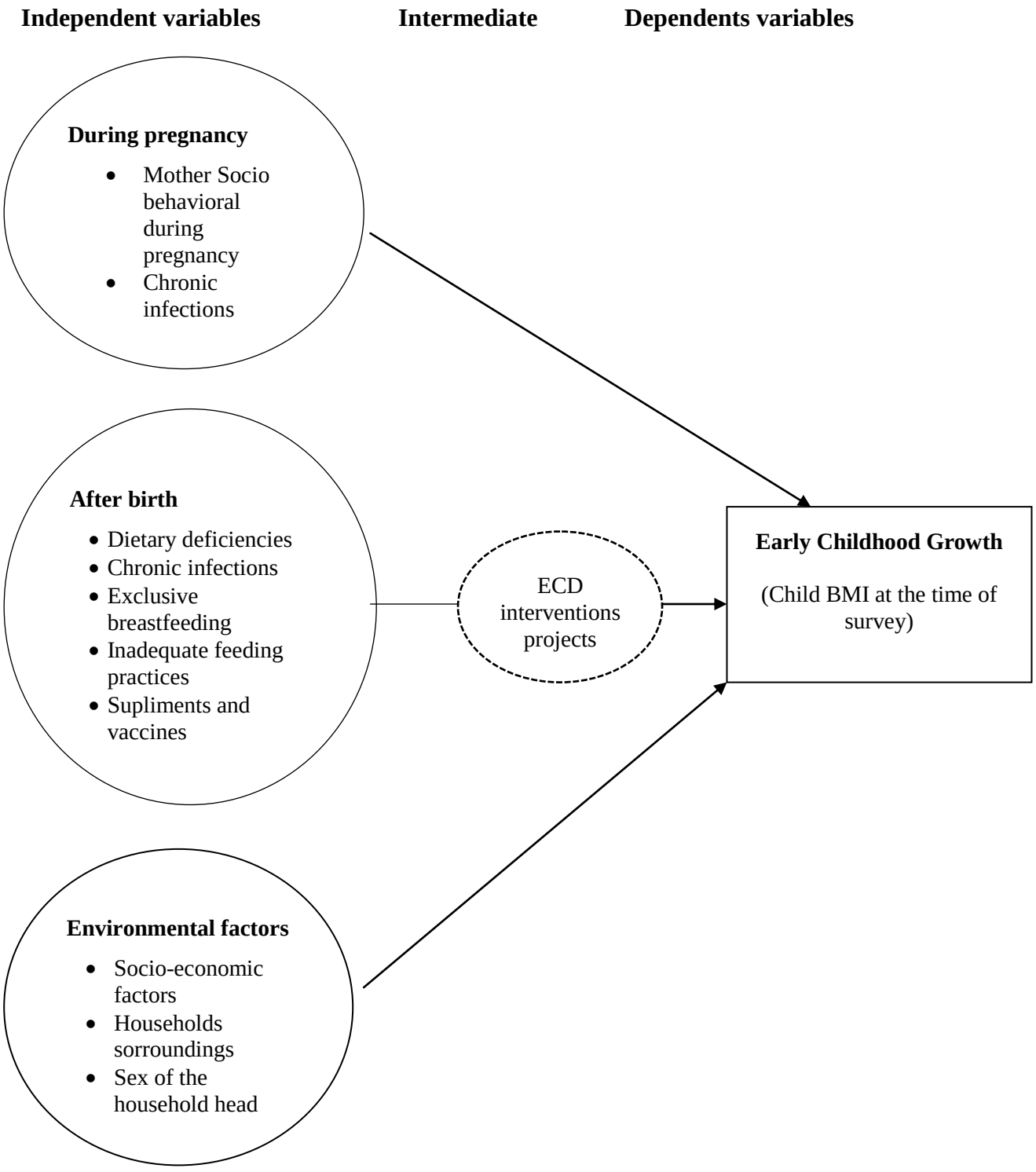


Figure 1: Conceptual framework

CHAPTER TWO

2.0 REVIEW OF LITERATURE

2.1 Introduction

This chapter reviews the various literature which gives relevant insight and information in order to critically examine factors related to early childhood development. The chapter comprises of review of the identified empirical studies on early childhood development. This chapter also examines various studies and reports on early childhood growth done both locally (Tanzania) and Regionally (Africa) in order to establish the research and knowledge gaps. These, in turn, will elaborate on key facets of the conceptual framework.

2.2 Empirical Studies

2.2.1 Sub Saharan Africa overview on child Growth

The African continent is divided by the Sahara desert both in terms of geography and child survival and developments. The countries south of the Sahara region are struggling to reach the millennium development goal four, globally this is the only region that many of the children are still dying from the diseases that can be prevented (UNICEF 2014). At least 1,200 children under age five years die of preventable diseases every day; 90 percent of these deaths occur in sub-Saharan Africa, with the Democratic Republic of the Congo and Nigeria accounting for 40 percent of the cases (ibid). About 99 million of all children under five years of age are underweight, although the prevalence of underweight has decreased, from 25 percent in 1990 to 15 percent in 2013, progress has been slow in certain regions (UNICEF 2013 and Cole *at al* 2000). In sub-Saharan Africa, underweight prevalence declined only 7 percent, from 29 percent in 1990 to 21 percent in 2012 (Matthew 2006). In addition, it is estimated that 1,150 children become infected with Human Immune Virus (HIV) daily and 2.5 million children are living with HIV worldwide (UNICEF 2013). Of those, 80% are born in sub-Saharan Africa and 90% of infections are acquired through Mother-to-Child (MTC) transmission.

2.2.2 A Snapshot of the Situation of child survival and development in Tanzania

Over the last decade, Tanzania has made remarkable progress in reducing under-five mortality. Since 1999, the under-five mortality rate has declined by almost 40%, a decrease equivalent to saving the lives of nearly 100,000 Tanzanian children every year (PEPFAR, 2015). These gains in child survival have largely been achieved through investment ineffective, mostly low-cost interventions, in particular, increased use of insecticide-treated mosquito nets, improved treatment of malaria, immunization, and expanded coverage of vitamin A supplementation.

Despite this progress, around 155,000 children under-five years are dying annually, the vast majority from readily preventable causes, malnutrition, malaria, and diarrhea, largely caused by drinking unsafe water and poor sanitation and hygiene (UNICEF 2013, Naudeau et al. 2011). Nearly 50,000 of these deaths are of children less than one-month-old of which three quarters survive for less than a week. Newborn deaths are inextricably linked to the health of the mother during pregnancy and to the adequacy of obstetric care at delivery; most can be averted if coverage of basic maternal and neonatal interventions is expanded. In Tanzania still, child protection needs are further magnified by widespread poverty and the impact of HIV and AIDS. One-third of households live in poverty (World Bank, 2010). Over two million children are orphans. Almost one in three girls and one in six boys are victims of child sexual abuse, millions of children either suffer or are at serious risk of violations (UNICEF 2014).

Since 2003, EGPAF-Tanzania has helped to significantly expand and strengthen the national HIV/AIDS program and is a lead implementing partner supporting the prevention of mother-to-child transmission of HIV (PMTCT) services that are fully integrated with maternal, neonatal and child health (MNCH) and HIV Care and Treatment (C&T) services. Approximately one in five health facilities with PMTCT services and one in four with C&T services are supported by EGPAF in Tabora region.

Current EGPAF supports 425 health facilities in six regions of Tanzania, among these 145 health facilities are within the Tabora region (PEPFAR 2018). EGPAF also provides Technical Assistance (TA) to the Ministry of Health and Social Welfare (MOHSW) for the development of policies, guidelines, training curricula, and monitoring tools for the Prevention of mother-to-child transmission (PMTCT), C&T and Home-Based Care (HBC) programs. Given EGPAF's presence and experience with integrated MNCH and HIV programs in Tanzania, we are well-positioned to use our platform to integrate extended early childhood development (ECD) interventions through ongoing activities

EGPAF's implemented the project by training of community leaders and groups on ECD, including MVCCs, to build capacity in the community for Health Care Workers to support the development of all young children, and strengthen linkages between the various stakeholders involved. Improve the capacity of Health Care Workers to provide age-appropriate care and support for children's development, and Health Care Workers receiving SMS messages with ECD information and guidance. EGPAF also integrates and promotes preventive interventions on holistic ECD into existing MNCH and HIV service platforms. EGPAF key approaches were, to build the capacity of Health Care Workers and the community to support a more holistic approach to ECD, two; Integrate extended age-appropriate ECD messages and practices into the continuum of facility-based MNCH/ PMTCT and HIV care and treatment services and three, to integrate age-appropriate ECD messages and practices into existing community-based MNCH services (PEPFAR, 2015).

2.2.3 Research Gap

Through various literature reviews, it was found that many children in Sub-Saharan Africa are disadvantaged in accessing important issues related to child development. Unfortunately, most communities from these countries consider the primary school as an area for child development, which in reality, the primary school interventions are already too late to prevent irreversible disability or to allow for the development of full adult capacity among children. To support this evidences, it was observed that there are many factors that influence child development. Factors such as genetics cannot be controlled but factors such as (i)

Environmental factors eg. School surroundings, geographical area, and neighborhood, (ii) Socio-economic factors such as household income, marital status and sex of the household head, and (ii) Household food security was measured using the indirect method of food security and nutritional assessment statements.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter explains and examines how data were collected using well developed tested tools as means towards realizing study objectives. In general, the chapter focuses on the study design, study area, study population, sample size and sampling procedure, data collection tools, data quality control and handling and lastly data analysis.

3.2 Study design

This research employed a descriptive cross-sectional design to explore determinants for early childhood growth using mixed methods i.e. and quantitative.

3.3 Study area

Nzega district is among seven districts of the Tabora region. Most parts of the district are located in the northern part of Tabora region, share borders with Shinyanga rural district in the North, Uyui district in the South, Kahama district to the West and Igunga district on the eastern side. Nzega district is administratively divided into 37 wards. The district is located at latitude 4099'S and longitude 33099' E and about 1228 m above the mean sea level. It has a population of 502,252 people of whom 257,249 (51.2%) are females and 245,003 (48.8%) are males with an average of the household size of 5.8 (Nzega district council, 2016). Currently, EGPAF trained 115 Health Care Workers(HCW) to integrate ECD interventions in all centers. These centers are found at various health facilities across the project area or village community buildings within Nzega district (EGPAF 2018). EGPAF through its ECD project centers engages the Health Care Workers (HCW) in the implementation of the ECD supported activities in all the 23 centers. The Malezi project under the umbrella of EGPAF also works with community health workers (CHW) at the community levels.

3.4 Study population

A population is the totality of any group of units which have one or more characteristics in common that are of interest to the research (Kothari, 2004). The targeted populations in this study were children and parents/guardian involved in the EGPAF-ECD projects database, the child-parent pair were invited to participate in the study after consent.

3.5 Sample size estimations

The sample size was estimated looking at both the quantitative and qualitative approached as shown below;

3.5.1 Quantitative sampling procedure

(i) Sample Size calculation

Sample Size calculation for this study survey base on the key indicator of the study, the prevalence risk factors for during pregnancy and after pregnancy, the desired precision and accepted margin error and assumption on the non-response rate.

The sample size was determined using the following formula

$$n=\frac{z^2 p\,(1-p)}{\varepsilon^2}$$

Where

n= the desired sample size,

z=standard deviation, given that the standard deviation 'z' is 1.96 correspondings to 95% CI

p=Based on the World Health Organization, the overall prevalence of underweight (10-29%) and prevalence of 15% underweight in Tanzania based on weight-for-age Z score (URT, 2010).

Hence this study assumes the overall prevalence of underweight (15%) for calculating P-value

ε- stand for the accepted margin error, the accepted margin error 'ε' set at 0.05,

Then, the desired minimum sample size 'N' was;

$$n=\frac{1.96^2\times 0.15\times(1-0.15)}{0.05^2}$$

n=196

From the above formula n=196, the researcher considered 10% for non-response, Therefore, a total of 215 mother-child pairs were sampled. During sampling, the EGPAF-ECD center's exit file was used to identify respondents by assigned a random number using a fixed seed or a number to obtain the desired sample population.

(ii) Sampling Procedures

Ten (10) EGPAF-ECD centers from urban settings and another nine (9) EGPAF-ECD centers from rural settings by looking at their accessibility and availability of resources were purposively identified to be included in this study. This strategy was considered given a wide geographic area of the EGPAF-ECD projects and limited resources for conducting this study. Then a consecutive sampling method was used to select eligible participants looking at the predetermined criteria among children registered in the selected. This is the type of sampling whereby every subject meeting the criteria of inclusion is selected until the required sample size is achieved. Hence by using registration datasheet/records from each selected EGPAF-ECD centers parent-child pairs were recruited consecutively into the study until the desired sample size attained. Twelve children aged 0-3 years were recruited from each of the selected EGPAF-ECD centers between 01st–30 July 2019. A total of 215 children each accompanies with her/his parents/guardians were invited to participate in the study.

3.5.2 Qualitative data sampling procedure

A qualitative approach was employed to complement the study by using key informants which were the Health Care Workers (HCWs) and Community Health Workers (CHWs) to dig out their opinion on determinants for early child growth in Nzega using their working experiences. The maximum variation sampling method was employed to selects Health Care Workers (HCWs) and Community Health Workers (CHWs) who involved in this part. The maximum variation sampling method was selected because given the nature of the study the researcher wanted to maximize the diversity of the participant's opinion to find more information to answer research questions. In this regard, the researchers wished to understand how a child's growth is affected by the environmental surroundings among Health Care Workers (HCWs) and Community Health Workers (CHWs) residing in Nzega district. When

using a maximum variation sampling method the researcher selects a small number of units or cases that maximize the diversity relevant to the research question.

EGPAF worked on building capacity to the Health Care Workers are across the Nzega district to support holistic ECD services. Build the capacity of Health Care Workers and the community to support a more holistic approach to ECD. Furthermore, the project through Community Health Workers (CHW) integrates ECD activities into its community outreach activities, improving the quality of child interactions and the environment in which the child develops through community engagement. In order to get detailed information, one (1) experienced Health Care Workers from each of the selected ECD centers invited to participate in the study, In addition, one (1) experienced Community Health Workers from urban settings and one (1) from rural setting were invited to participate in the study.

3.6 Inclusion criteria

(a) Parents/guardians of children aged 0-3 years registered with EGPAF-ECD projects
(b) A resident of Nzega district at least living in the area for 1 year

3.7 Exclusion criteria

(a) Participants who did not sign out the consent form
(b) Children's who was sick at the time of data collection

3.8 Study Variables

(a) Independent Variables

The following independent variables were measured in this study;

i. Indicators during pregnancy (i) Mothers socio-behavioral during pregnancy, (ii) Chronic infections, (iii) Micronutrients deficiency, (iv) age and sex of the mother during this child pregnancy

ii. Indicators after birth (i) Dietary deficiencies, (ii) Chronic infections, ((i) Inadequate feeding practices (iv) Supplements and vaccines (v) Child demographic variables (sex and age)

iii. Environmental factors (i) socio-economic factors (ii) households surroundings (ii) Marital status (iv) Sex of the household head

(b) Dependent Variable

Child physical growth was the dependent variable measured using the body mass index (BMI). Weight and height for each child participating in the study were measured during the survey. Then the standard formula to calculate BMI as suggested by WHO (2010) was employed whereas the BMI indicator was assessed by looking at (i) child being underweight, less than the 5th percentile (ii) healthy weight, 5th percentile up to the 85th percentile (ii) overweight, 85th to less than the 95th percentile, and (iii) has obesity equal to or greater than the 95th percentile.

3.9 Dummy Variables

The following dummy tables are designed to show how the variables were coded and results presented;

Table 1.1 Dummy Variable

SN	VARIABLES	RESPONSES AND CODING
1	Sex of the participant	Male Female
2	Age	[.....]Month [.....] years
3	Marital status	Married Single Divorced /separated Cohabiting
4	Indicators during pregnancy Mother behavioral during pregnancy	Smoking Alcohol drinking
5	Chronic infections	Yes, No
6	Micronutrients deficiency	Iron and Vitamin supplements
7	Indicators after birth	Exclusive breastfeeding Inadequate feeding practices

		Supplements and vaccines Dietary deficiencies,
8	Mothers demographic variables	Age at birth of the child
9	Environmental factors	Socio-economic factors Household surroundings Household income Sex of the household head household Food security
10	Child current - BMI	Weight Height Age Sex

3.10 Data collection tool

The tools used for data collection in this study were structured questionnaires and in-depth interview guides.

3.10.1 Structured interview schedule

Data were collected using the structured interview schedule. The questionnaire was developed in English and translated in Kiswahili. The questionnaire was made to capture various descriptive data to answer research questions. The tool (Appendix II) consists of socio-demographic indicators, Indicators during pregnancy, indicators after birth and other external factors that influence child growth.

3.10.2 In-depth interview

An in-depth interview was used to collect data from Health Care Workers and Community Health Workers (**Appendix VI).** The researcher uses an interview guide to conduct a face to face in-depth interview to collect reliable information on external factors that influence child growth from Health Care Workers using their experiences working at the ECD project cites. One experienced Health Care Workers from each of the nineteen ECD centers participated in the interview. The names of the Health Care Workers who meet conditions including having experience working with ECD were pulled from the EGPAF Nzega offices records. In addition, one (1) Community Health Workers who is also a residence of Nzega suburban and one (1) Community Health Workers who are residing in Itetemia village which has typical

rural settings were invited to participate in the study. Therefore a total number of 21 in-depth interviews were conducted to collect Health Care Workers and Community Health Workers' opinions and experiences about environments factors that influence child growth in their settings until when saturation point was reached. The interview session was conducted with the aid of audio recorders by research assistants at each Health Care Workers ECD centers.

3.10.3 Review of documents

Document reviews from various EGPAF-ECD projects were used to provide vast information to compliments information while trying to answer research questions. The researcher basically reviews factors associated with child developments using EGPAF-ECD projects monthly projects. The following documents were reviewed; (ii) EGPAF Annual report 2017/2018, (ii) Country/Regional Operational Plan (COP/ROP) 2015 Guidance." PEPFAR. February 12, 2015, (iii) ECD Center daily reports and (iv) ECD registration records. Through these documents, various Health Care Workers records, Community Health Workers records, ECD project progress, and EGPAF/ECD project catchment area were collected to complement the interest of the study.

3.11 Data Processing and Analysis

Data were analyzed and interpreted using both quantitative and qualitative approaches as shown below;

(a) Quantitative data analysis

Quantitative data were processed and analyzed using the Statistical Package for Social Science (SPSS) version 20. Data processing involves data editing, coding, classification and tabulation of collected data so that they became easy to control for analysis. Descriptive statistics such as frequencies and percentages were used to analyze the variables of the study population. Association between independent variables and dependent variables was analyzed by the Pearson Chi-square test at a 95% confidence interval. Factors with value < 0.05 were considered statistically significant.

(b) Qualitative data analysis

Content data analysis was used to organize and elicit meaning from the tape recorders which contains data collected (Krippendorff, 2004; Kothari, 2004). Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data. Using content analysis, researchers quantified and analyzed the meanings and relationships of such words, themes, or concepts. For this study, the interview sessions were systematically evaluated and statements were drawn and theme analyzed based on research questions.

3.12 Validity and Reliability of data

3.12.1 Validity of data

Before real data collection process began, the researcher tested the data collection tools using one of the identified child center in Tabora town with a similar setting like Malezi centers operated by the EGPAF project to find out whether the questions are clear and understood by respondents and that they will assist to answer the study questions. The tools were found valid with no major modifications. According to Katzellenbogen et al (2002), validity refers to the degree of the information obtained when the measurement is repeated on the same subject or the same hence data validity refers to empirical measurement which adequately reflects the real meaning of the concept under study.

3.12.2 Reliability of data

Reliability was termed as the extent to which results are consistent over time. Before actual data collection, a pilot test was carried by collecting data from 20 children from one of the childcare centers in Tabora town using the designed questioners. Data collected from the pilot test were analyzed using the Statistical Package for Social Science (SPSS version 20). The Cronbach alpha output was used to conclude on the reliability of the data collection tool. Acceding to Saunders, *et al* (2006), Cronbach's alpha (α) should be ≥ 0.70 for data to be said reliable and used in the analysis. In this test, Cronbach‟s Alpha for constructs was above 0.71 which indicated that the data collection tool was reliable.

3.13 Study Limitations

The study specifically focused on children registered by the EGPAF-ECD in Nzega district and not all children within the district. There might be influences on the result because these are children who resided in areas where EGPAF has been implementing and intervention. Therefore results are not representative of all children in the district. The mothers/guardians were secondary beneficiaries of the project and therefore a possibility of social desirability bias in their reporting of some information regarding their children. Incorrect dating of the births can distort the data, particularly if a child involved is taken care of by the Health Care Workers or guardians. To address this the researcher used the supportive technique on probing and collecting the date of births for children whose parents passed away.

3.14 Ethical Consideration

Ethical approval number DA 287/298/01A was obtained from the Institutional Review Board of the Muhimbili University of Health and Allied Sciences, while permission to conduct the study was obtained from the relevant regional, district, ward and village/*Mtaa* authorities before commencing data collection. The acquisition of permission of entry to study sites was requested following the procedure of the EGPAF program offices at Nzega district. Informed verbal consent was administered to parents involved in this study in Kiswahili. Willing respondents sign a written informed consent form. Those cannot read and write, the information read in the presence of a witness and then thumb-printed and the witness countersigned. Respondents were made aware of their freedom to participate in the study, conversations, anonymity, confidentiality as well as the right of withdrawing in the course of the study without negative consequences.

CHAPTER FOUR

4.0 RESULTS

4.1 Quantitative Findings

4.1.1 Socio-demographic characteristics of study participants

A total of 215 respondents participated in the study after being consented. Parents or guardians were eligible for the study if their children were between ages 0 and 3 at the time of data collection registered by the ECD-EGPAF centers. Respondents (parents/guardians) were provided with informed consent during enrolment. Research assistants read the consent statements to each selected participant described the scope and aims of the study, including potential harm or benefits.

Most of these respondents (94.4%) were biological parents of the children's involvement in this study, few (5.6%) were guardians or Health Care Workers. The majority of them been between the age of 19-35 years by the time of data collection, 20.9% were between the age of 36-49 years and very few were at the age below 18 years and above 49 years, 2.8% and 1.4 % respectively. The majority of the respondents (86.5%) were married. More than half (58.6%) of them had completed at least primary school, while 5.1% completed secondary school education, 20.9% had not attained any formal education and very few, less than one percent attained a higher level of education (Table 1)

Table 4.1. Parents/guardian socio-demographic characteristics

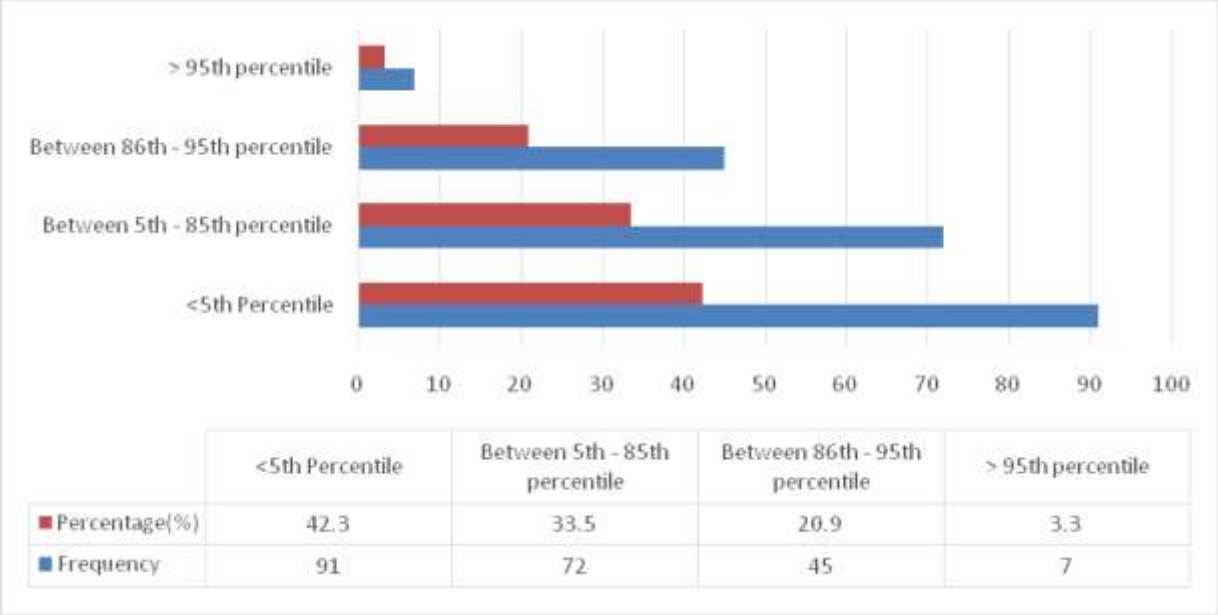
Variable	Frequency (n=215)	Percentage (%)
Respondent type		
Guardian	12	5.6
Parent	203	94.4
Sex		
Female	207	96.3
Male	8	3.7
Age		
Below 18 yrs	6	2.8
19-35 yrs	161	74.9
36-49 yrs	45	20.9
Above 49yrs	3	1.4
Education level attained		
Primary Incomplete	19	8.8
Primary Complete	126	58.6
Secondary Incomplete	13	6.0
Secondary +	12	5.6
No education	45	20.9
Marital Status		
Cohabiting	5	2.3
Divorce/Widow/other	10	4.7
Married	186	86.5
Single	14	6.5

Over half (53.5%) of the children involved in this study were girls while 46.5% of them were boys. As inclusion criteria, the study involved children's between age 0 and 3 at the time of recruitment Table 2 below depicts that, 46.0% among these children's were at age one, 29% were at age two and few (11.6%) among these children were at age three.

Table 4.2: Frequency distribution of children's by selected demographic characteristics

Variables	Frequency(n=215)	Percentage
Sex		
Girls	115	53.5
Boys	100	46.5
Age category		
Below 1 year	27	12.6
1 year	99	46.0
2 years	64	29.8
3 years	25	11.6

Then the standard formula to calculate BMI was employed whereas the BMI indicator was assessed by looking at (i) child being underweight, less than the 5th percentile (ii) healthy weight, 5th percentile up to the 85th percentile (iii) overweight, 85th to less than the 95th percentile, and (iv) has obesity equal to or greater than the 95th percentile. Figure 2 shows that 42.3% of the children who participated in this study scored less than the 5^{th} percentile, which means they were underweight. About 33% of the children's scored between 5 and 85 percentiles, for which we regard these children's having good health. At least 20.9%of the children's involvement in this study falls between 86^{th} to 95^{th} scores which means they were overweight and very few (3.3%) scored above 95^{th} percentile interpreted as above.



	<5th Percentile	Between 5th - 85th percentile	Between 86th - 95th percentile	> 95th percentile
Percentage(%)	42.3	33.5	20.9	3.3
Frequency	91	72	45	7

Figure 2: BMI assessment among children

4.2 Factors associated with optimal childhood growth during pregnancy in Nzega districts

As shown in table 2, early childhood growth was significantly associated with dietary deficiencies and whether mother ever had chronic diseases, χ=48.806 p=0.000) and χ=48.806 respectively. Whether the mother smoked during pregnancy (χ=5.554 p=0.135) or was drinking alcohol (χ=1.640 p=0.670, and whether the mother communicates with her child during pregnancy (χ=7.504 p=0.057) was not significantly associated with childhood growth. Further analysis shows that among mothers who reported to have had chronic diseases, a large proportion (86.7%) of their children were underweight. Results also show that a large proportion (70.8%) of women who reported experiencing dietary deficiency during their pregnancy their child was underweight. Table 3 depicts that, four out of six children whose mothers reported that they had used to drink during their pregnancy were underweight, one child was found to be underweight and one had health weight. Besides these findings, the chi-square analysis on mothers who reported to drink alcohol during their last pregnancy was however not significantly associated with child growth (χ=1.640 p=0.670).

Table 4.3: Early Childhood Growth by selected maternal health and behavioral indicators of the mother during pregnancy

	healthy weight	obesity	Overweight	underweight	Total
Chronic diseased					
No	70(35%)	7(3.5%)	45(22.5%)	78(39%0	200(100%)
Yes	2(13.3%0	0(0%0	0(0%)	13(86.7%)	15(100%)
				χ=13.326 p=0.004	
Dietary deficiencies					
very time needed	57(43.4%)	7(5.4%)	35(27.1%)	31(24%)	130(100%)
When food available	15(17.6%)	0(0%)	10(11.8%)	60(70.6%)	85(100%)
				χ=48.806 p=0.000	
Ever communicate with this child at pregnancy					
No	30(27.5%)	3(2.8%)	20(18.3%)	56(51.4%)	109(100%)
Yes	42(39.5%)	4(3.8%)	25(23.6%)	35(33%)	106(100%)
				χ=7.504 p=0.057	
Drank alcohol during pregnancy					
No	71(34%)	7(3.3%)	44(21.1%)	87(41.6%)	209(100%)
Yes	1(16.7%)	0(0%)	1(16.7%)	4(66.7%)	6(100%)
				χ=1.640 p=0.670	
Smoked during pregnancy					
No	72(34.1%)	(3.3%)7	45(21.3%)	87(41.2%)	211(100%)
Yes	0(0%)	0(0%)	0(0%)	4(100%)	4(100%)
				χ=5.554 p=0.135	

4.3 Factors associated with optimal childhood growth after birth

A chi-square test was used to measure the association between childhood growth and selected factors after birth. The following factors were selected; Parity, stimulants, mother's age at birth, household income and dietary deficiencies. As it is shown in Table 4, the number of

siblings was significantly (χ=14.746,p=0.022)associated with childhood growth. The analysis revealed that the number of siblings increases the proportion and the likelihood of underweight child increases. A high proportion (60.3%) of the respondent's child who reported to have more than 4 siblings were identified as underweight during data collection. A relatively high proportion of child who reported to have siblings between three and four siblings during the time of data collection.

Table 4.4: Cross-tabulation of child growth by parity

	Healthy weight	**Obesity**	**Overweight**	**Underweight**	**Total**
Parity					
0-2 Siblings	33(42.3%)	4(5.1%)	15(19.2%)	26(33.3%	78(100%)
3-4 Siblings	25(33.8%)	2(2.7%)	20(27.0%)	27(36.5%)	74(100%)
≥4 Siblings	14(22.2%0	1(1.6%)	10(15.9%)	38 (60.3%)	63(100%)
			χ=14.746,p=0.022		

Table 5 shows the results of the cross-tabulation of child growth and whether the child was provided with supplements and vaccines. The researcher selected two indicators in this analysis i.e. vitamin A vaccine and whether a child was provided with iron supplements. Chi-square test shows that there was no statistical relationship between vitamin A and iron supplements with childhood growth in terms of whether the child was scored as underweight, healthy weight, obese or overweight, (χ=4.143,p=0.201) and (χ=6.143,p=0.078)for vitamin A and iron supplements respectively. However, the high proportion (73.3%) of the child who at the time of the survey were not yet provided with vitamin A were categorized as underweight. The same finding was observed among children reported to have not received iron supplements, the majority (93.4%)were categorized as underweight while a small proportion (6.6%) were healthy.

Table 4.5: Cross-tabulation of child growth by whether a child received Vitamin A vaccine and Iron Supplementation

	healthy weight	**obesity**	**overweight**	**underweight**	**Total**
Vitamin A vaccine					
NO	4(26.7%)	0(0%)	0(0%)	11(73.3%)	15(100%)
Yes	68(34.0%)	7(3.5%)	40(20.0%)	85(42.5%)	200(100%)
				χ=4.143,p=0.201	
Iron supplements	**healthy weight**	**obesity**	**overweight**	**underweight**	**Total**
NO	1(6.6%)	0(0%)	0(0%)	14(93.4%)	15(100%)
Yes	68(34.0%)	7(3.5%)	40(20.0%)	85(42.5%)	200(100%)
				χ=6.143,p=0.078	

Unlike other predicting factors used in this study, food availability and household income were statistically associated with childhood growth. Parents or guardians were asked to give their individual assessment whether their households have enough food or not since the last harvest. Respondents who reported that food was available and enough in their household mostly fell under the healthy weight score. The majority (70.6%) of children whose parents reported that their household had experienced a shortage of food were underweight, compared to children whose parents reported to have enough food, only (24.0%) categorized as underweight. Hence food availability is significantly associated with childhood growth (χ=48.806, p=0.000).

In assessing the household wealth, each household was supposed to be assigned with a score for each asset, and the scores summed and divided into quintiles from lowest to highest quintiles. But because of its sensitivity and hard to measure, and again with limited resources available and that the data collection activities were carried at each respective ECD centers and not at home, The researcher opted to ask each parent or guardian involved in the study to categorize their own monthly income, within identified three categories i.e. Less than 100,000/= per month, between 100,000 and 500,000/=per months, and above 500,000/= per month. Findings show that, unlike food availability, household income was not significantly associated with childhood growth in this study (χ=12.028 p=0.061). However, 46.0% of children whose parents reported to have less than 100,000/= per month were scored as underweight while (31.1%) had a healthy weight, 3.7% were obese, and 3.7% were categorized as overweight (Table 6).

Table 4.6: Cross-tabulation of child growth by parent/guardian income and dietary deficiencies

	healthy weight	**obesity**	**overweight**	**underweight**	**Total**
Food availability					
Enough	57(43.4%)	7(5.4%)	35(27.1%)	31(24.0%)	129(100%)
Not Enough	15(17.6%)	0(0%)	10(11.8%)	60(70.6%)	85(100%)
				χ=48.806,p=0.000	
	healthy weight	**obesity**	**overweight**	**underweight**	**Total**
Parents income					
100,000 - 500,000/=	20(43.5%)	1(2.2%)	9(19.6%)	16(34.8%)	46(100%)
≤500,000/=	2(25%)	0(0%)	5(0%)	1(12.5%)	8(100%)
>100,000/=	50(31.1%)	6(3.7%)	31(19.3%)	74(46.0%)	161(100%)
				χ=12.028p=0.061	

4.4 Qualitative findings

Qualitative data were used to understand the environmental factors associated with optimal child growth in Nzega districts. A total of nineteen (19) Health Care Workers and two (2) Community Health Workers participated in the in-depth-interviews findings from the interview were assessed to complement the qualitative findings and researcher observations during data collection.

4.5 Socio-economic factors influencing optimal childhood growth in Nzega districts

The majority of participants were on the opinion that the socioeconomic status of the parents or guardians determines many things about child early growth. A 43 old woman who works as a Health Care Worker at one of the ECD centers, who has more than 10 years' experience working in community health, was on the view that mother's education and occupation type are among the leading factors that affect the child's health status. This argument was supported by the community health workers who participated in this study who had a common guardian income that poverty is the leading factor toward child growth in their settings. The caregiver had this to say:

> "Child growth and Wellbeing is highly affected by high levels of poverty within household..most of the women whose child are vulnerable have no job ..neither good education"

A 5 years Community Health Workers residing in Nzega urban neighborhood said:

> "…from my experience working at this community…. children from less well-to-do families are at greater risk than wealthier children for health outcomes….most of children's we refer to our health centers with poor health are actually coming from very poor families"

There were those who believed and had the opinion that the presence of the father or mother had a positive impact on child growth. That, lack of presence and care from parents for their children is one of the key factors identified as negatively affecting the children's health. Some of the issues highlighted under this point include the negative psychological effects on

children due to the non-availability of their father or mother, or both, in other words, a socially broken family, parents being away from the home, a broken home due to domestic violence etc., parent's delinquency (especially father's alcohol addiction), and receiving less love and affection from parents.

A Health Care Workers with 8 years working experience was quoted as saying:

> "…the care that children receive from biological parents are essential and necessary ... I can see variances when comparing children that are living with their biological parents and those living with other people like a guardian or in the centers"

While respond finding to the interview questions on socio-factors affecting child well-being, it emerged during the responses that sex of the household head and household size were mentioned as among the leading factors affecting child growth. The majority of Health Care Workers reported that, from their experiences, most of the children that are coming from households whose head of household is male are betters compared to their counterparts. The same observation was claimed that children who have a lower number of siblings were healthier compared to their counterparts who at home they had as many as 8 siblings, thus family size is in most cases related with food shortage in this community and particularly during non-harvesting seasons.

A Community Health Workers said;

> " …..When the size of the household is big... and the family is poor. Children are the one who suffers the most"

4.6 Household surroundings and neighborhood

The majority of participants were of the opinion that household surroundings are of paramount in regards to early childhood growth. During interview sessions, care providers were recorded arguing that poor household surroundings affect children differently than adults.

One Health Care Workers was critically arguing that, a child below age 3 who plays in dirt contaminated waters or food can easily become sick, she gave an example and telling that, a child playing with dirty soil or sewage systems is highly vulnerable getting worms or diarrhea, likewise a child with asthma playing outside when the air quality is bad may have an asthma attack because their bodies are still growing, children are at greater risk if they are exposed to environmental contaminants.

> "…….What irritates me most is when people from my community don't clean their surroundings and claim poverty. We have been struggling hard helping our children from the burden of diseases..of course, attitude irritates me that I even went to the Social Welfare offices and complained. They just told me to go back and sort it out through community meetings. "**Health Care Workers**

Community health workers have concerns about poor environments in regards to not only children but the entire community. A Community Health Workers serving at Nzega sub-urban claimed that Poor health environments are not just outside the homes, but can also be found inside a home or school. These community health workers instated that, drinking water is also a concern if it is contaminated with bacteria and other harmful viruses can be a threat to anyone's health, but especially to young children.

> "……..Its everybody responsibility to ensure our neighborhood is clear..so that we protect our self and our children, Community" **Community Health Workers**

Some participants arguing that it is not about environments but ignorance among parents when it comes to the issue of cleanness. Respondent continues to argue that cleaning our environments is the issue of education and not related to household wealth.

> "….I frankly think that…ignorance on health-related issues during and after pregnancy are a serious concern in this community in regard to child growth and not poverty as majority pretending" **Health Care Workers**

However other participants denied having encountered such incidences of household income with child health. Instead, the study participant indicated that with appropriate health education and information even poor families have a chance of raising healthy children.

> "….I think education should be provided among mothers …know families that are very poor but with proper information and education from the health centers….their children are doing well….**Health Care Workers**

4.7 Summary of the Findings: Qualitative and Quantitative Findings

Both qualitative and quantitative findings in this study concur with the fact that factors surrounding child during and after birth have an impact on their childhood growth. Infarct the qualitative findings revealed that dietary deficiencies and whether mother ever had chronic diseases during pregnancy have a significant association with child growth. Albeit, food availability, household size were also statistically associated with child growth. All these factors have a very close association with household poverty, household surroundings, poor hygiene environment, and intra-households factors which were suggested by the qualitative data as factors associated with child growth. Apparently, this study proposed that there are factors during pregnancy, after birth and home surroundings which have a substantial effect on early child growth. Both qualitative and quantitative results. The findings are supported by the existing knowledge which urges those surroundings before and after childbirth including sanitation, which has a huge impact on their well-being.

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

A discussion of the research findings is presented in this chapter. Results in chapter four form the basis for these discussions, conclusions, and recommendations in assessing determinants for early childhood growth using evidence from early childhood development (ECD) intervention project implemented by EGPAF in Nzega District. The researcher's views are also provided and at also areas for further research are presented in this chapter.

5.2 Factors associated with optimal childhood growth during pregnancy in Nzega districts

Children's weight (BMI) were measured according to the WHO standard and assessments and compared according to the variables of interest. From the findings in chapter four, 42.3% of the children who participated in this study scored less than the 5th percentile, which means they were underweight. About 33% of the children's scored between 5 and 85 percentiles, for which we regard these children's having good health. 20.9% of the children's falls between 86th to 95th scores which means they were overweight and very few (3.3%) scored above 95th percentile interpreting to be obese. According to WHO guidelines which are generic and may not provide accurate cut-off values for Tanzania children, 5% of the children are overweight (World Health Organization, 2016).

This study supports the situation in many parts of developing countries that underweight among children is still a problem. Albeit, the prevalence of underweight in children has received attention from international health agencies but seems to be overshadowed by the epidemic status afforded to overweight and obesity, Larson and Story (2011) Both over and underweight are linked to morbidity and mortality in children not only in Tanzania but all over the globe.

In addition, dietary deficiencies, whether mother ever had chronic diseases during pregnancy were significantly associated with child growth. In this study, dietary deficiencies and chronic diseases are major factors during pregnancy that were associated with early childhood growth in Nzega. These findings support evidence from various studies on the association on the chronic diseases and dietary deficiencies during pregnancy and child health and well-being (Gogoi and Unisa 2017: Siu and Colman 2011: Leibowitz et al 2013), these studies suggest perinatal outcome to be less favorable for infants of women with chronic diseases. It is obvious that, if a woman is malnourished during pregnancy, or if her child is malnourished during the first two years of life, the child's physical growth and development may be slowed. This cannot be made up when the child is older it will affect the child for the rest of his or her life. The fight against persistent underweight, among children in developing countries, is based on appropriate maternal, infant and young child feeding practices including micronutrient deficiencies prevention and control.

On the other hand, whether the mother smoked during pregnancy or was drinking alcohol was not significantly associated with childhood growth. These findings are contracted as suggested by many of the studies that drinking alcohol, smoking or taking drugs during pregnancy or while breastfeeding can affect child's health (Baghurst*et al*, 2016; Cole, M *et al*, 2000: Mung'ala Odera V *et al*, 2010: Neuman and Epstein Devercelli 2013). These studies show that multiple complications are more likely to occur during pregnancy when a woman smokes. These problems may include preterm birth, which is birth that occurs before 37 weeks of pregnancy. Babies that are born too early may not be fully developed. They may be smaller than babies born to nonsmokers. These babies are at increased risk of sudden infant death syndrome. They also are more likely to develop asthma and obesity in childhood compared to those whom their mothers didn't smoke during pregnancy. Medical practitioners are recommending that women who are pregnant, trying to conceive or breastfeeding should avoid smoking, drinking alcohol or taking illegal drugs. That drinking too much can lead to, premature birth, low birth weight, impacting the physical and mental development of the child, a condition known as Foetal Alcohol Syndrome. Therefore, mothers should avoid risky

behaviors such as smoking, using alcohol or drugs during their pregnancy, since these behaviors directly affect the infant's health during pregnancy. In this regard, women should be encouraged to avoid drinking, smoking and above all should be encouraged to start antenatal clinics earlier and that education and all heathland dietary-related counseling be provided. In addition availability of ECD programs and services to support children's development during the early years is a crucial component of an overall strategy for success in childhood. ECD services may address one or more of the key developmental domains.

5.3 Factors associated with optimal childhood growth after birth

From the results, parity, stimulants, mother's age at birth, household income, and dietary deficiencies were assessed as factors after birth. Results from this study suggested that parity was significantly associated with childhood growth, in addition, food availability and household income were statistically associated with child-hood growth while vitamin A and iron supplements were not significantly associated with the dependent variable.

In regards to dietary deficiency, It is well known that, when a household experiences food crisis, reducing the number of meals is a common coping strategy, in another way, this was realized from these findings as in reality, this could negatively affect child growth. Yabanci *et al.*, (2014) showed a positive correlation between food deficiency and child growth. Although causality cannot be established in a cross-sectional study, it is plausible to assume that food insecurity status would result in a lower intake of healthy foods and nutrients. The primary factor influencing utilization is individual health status. The definition of food security set out at the 1996 World Food Summit stated that "food security exists when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life.

Food availability is one of the most important processes, which refers to ensuring sufficient quantity and diversity of food is available for consumption from the farm, the marketplace or elsewhere. Second, food access refers to households having the physical and financial resources required to obtain these foods as well as not suffering limits to their access deriving

from customs or traditions. Third and key to nutrition is food utilization, which implies the capacity and resources necessary to use and store food appropriately to support healthy diets.

The household size was also associated with child growth, this study shows that the number of siblings has an impact on child growth and health. Unlike the study conducted in Sweden which indicates that growing up in a large family does not have a detrimental effect on physical health. Family background is generally seen as being a crucial element of individual wellbeing, both early in life and in adulthood (Steelman et al. 2002). A number of very well established theoretical models from a range of social science disciplines have examined the mechanisms through which children who are raised in a large family tend to be less advantaged than children with fewer siblings

In regards to iron supplements during childhood, literature shows that approximately 300 million children globally had anemia in 2011. The most common cause of anemia is thought to be a deficiency in iron, an essential nutrient for development and cell growth in the immune and neural systems, as well as in the regulation of energy metabolism and exercise. Iron deficiency can result from inadequate intake or absorption of dietary iron, increased need during periods of growth, and blood loss from helminth infection or menstruation in adolescent girls. However, the adverse effect profile of iron supplements and effects on development and growth are uncertain

Although findings from this study show vitamin A supplements are not significantly associated with early childhood growth, Literatures shows that Vitamin A is an essential nutrient for mammalian growth, nonetheless, it has been difficult to demonstrate the effect of vitamin A deficiency on the growth of children. The unexpected result in this determinant could be a limitation of the study as responses on whether a child received vitamin or not was collected from the respondent's comments.

5.4 Environmental factors influence optimal childhood growth in Nzega districts

Household poverty, household's surroundings, poor hygiene environment, and intra-households factors were mentioned by the majority of the participants to negatively affect child growth in the study area. However some of the participants arguing that education should be given to the community and families on the importance of cleaning their surroundings and not claiming poverty.

Lack of parent's absence and care was one of the key factors identified as negatively affecting the children's growth. Some of the issues highlighted under this point include the negative effects on children due to the non-availability of their father or mother, These findings are supported by other studies like Byrne et al, (2011), Salmon et al, (2007) and Júlíusson (2010), that claimed that absence of their father, mother, or both, from the family, is a serious concern for children. However taking consideration of background and demographic characteristics of the study participants in Nzega districts, the data does not form a solid basis for examining whether changing family structures or divorce stress during childhood may affect weight status among children.

Apparently, this study proposed that home surroundings have a very substantial effect on early child growth. The findings are supported by the existing knowledge which urges that children's surroundings including sanitation have a huge impact on their well-being. A healthy, safe home is essential for a child to grow, health and explore. A problematic home environmental and a non-hygienic one, by contrast, can have detrimental effects on a child's growth, social and emotional development. Research has shown that a negative home environment during the early years of life can lead to impaired development, including poor health among the children. In concurrences with various other study findings, therefore, researcher conclude that living conditions and infrastructure such as sanitation, access to clean water, and availability of health services for children, which are under the control of the community, as well as access to health care services must be improved to improve child growth, especially in rural areas where the availability of such services might be limited compared to urban settings .

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

From the findings, the following factors depict that there are factors associated with child growth during pregnancy, after birth and factors associated with household surroundings.

In regards to factors during pregnancy, mothers dietary deficiencies and whether mother ever had chronic diseases. On the other hand mother's socio behavior like smoking and drinking alcohol, and whether the mother communicates with her child at pregnancy were not significantly associated with childhood growth. Factors after birth, parity, stimulants, mother's age at birth, household income and dietary deficiencies were assessed as factors after birth. Results from this study suggested that parity, food availability and household income were statistically associated with child-hood growth while vitamin A and iron supplements were not significantly associated with the dependent variable.

Researcher assess environmental/surrounding factors, and study findings show that, whether a child left with a biological parent or guardian, the gender of household head and home surroundings were found to be significantly associated with early childhood growth. Nevertheless, marital status was not significantly associated with childhood growth in this study, however, there was a very justifiable association on whether a child is underweight or with desirable weight and marital status.

Arguably, a lot of the course of our lives is set by what happens between the ages of two through five when we're discovering and understanding our world.

6.2 Recommendations

The following are recommended in response to the above challenges revealed by the study;

1) Overall, one major recommendation that can be drawn from this study is that factors associated with early child growth are multifactorial and interdependent. Hence, there is a need to adopt a multi-strategy community-based approach like ECD projects (like the Malezi project operating under EGPF) that targets the distal and intermediate determinants of early childhood growth. Such an approach should include counseling sessions for mothers/guardian with the aim of improving early childhood growth and well-being

2) Early childhood growth education though media and community development machinery shall be extended to reach most of the communities as they can serve as a window of opportunity for the holistic wellbeing of children.

3) However, the researcher recommends that early identification of pregnancy should be strengthening at the community level as an entry point to issues related to both maternal health and early child growth using the existing community health workers through MOHCDGEC.

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APPENDICES

Appendix I: Informed Consent (English Version)-Children's parents/Guardian

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES - DIRECTORATE OF RESEARCH & PUBLICATIONS

ID-NO: ...../......../.....

Consent to participate in this study

Greetings!! My name is **Frank Jasper Lyimo** from Muhimbili University of Health and Allied Sciences, Dar es Salaam. At the moment, we are carrying out a study to assess the determinants for early childhood growth using evidence from early childhood development (ECD) Project implemented by EGPAF in Nzega District of Tabora Region

Purpose of the study

This study aims to collect information on factors that determine early childhood growth, you are being asked to participate in this study as a parent or guardian of the selected child from Nzega district and would be grateful if you are willing to participate by answering questions from this study.

What Participation Involves

If you agree to participate in this study the following will occur:

1. You will sit with a trained interviewer and will be required to answer questions that have been prepared for the study through the interview in order to obtain the intended information on factors that determine early child development within Nzega District. The interviewer will be recording your responses in the questionnaire.
2. No identifying information such as name will be collected from you during this interview, except your age, level of education, marital status and your current occupation.
3. You will be interviewed only once for approximately 20 minutes in a private setting.

Confidentiality

I assure you that all the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will ensure that any information included in our report does not identify you as a respondent as we will not put your name or other identifying information on the records of the information you provide.

Risks

You will be asked questions about your personal particulars and understanding factors that determine early childhood growth. Some questions could potentially make you feel uncomfortable. You may refuse to answer any particular question and may stop the interview at any time.

Rights to Withdraw and Alternatives

Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve the loss of any benefits to which you are otherwise entitled.

Benefits

The information you provide us is extremely important and valuable. It will help to increase our understanding of the determinants for early childhood growth using evidence from early childhood development (ECD) Project implemented by EGPAF in Nzega District of Tabora Region. There is no direct benefit however the findings will use to improve the services.

In case of injury

We are not anticipated that any harm will occur as a result of your participation in this study.

Compensation

There will be no compensation for the time spent during the interview; however, your participation is highly appreciated.

Who to contact

If you have questions about this study, please don't hesitate to contact:

Frank Jasper Lyimo, The **Principal Investigator** Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam (Tel. no. 0769501830).

Chairman of Senate Research and Publications P. O. Box 65001, Dar es Salaam. **Dr. Bruno Sunguyaand Dr. Mangi J. Ezekiel, The supervisor** of this study.

Signature

Do you agree to participate and answer questions in this study?

Participant Agrees [__]

Participant Disagree [__]

I _____ have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of Participant _____

Signature of witness (if participant cannot read) _____

Thumb Print _____

Signature of research assistant _____

Date of signed consent _____

Appendix II: Household Questionnaire (English Version) for Children's parents/Guardian

DETERMINANTS FOR EARLY CHILD GROWTH SURVEY QUESTIONNAIRE

Part A: Background

Q CODE	QUESTION	RESPONSES AND CODING
AO	Questionnaire Child Identification Number	[.....]
A1	Study subject category	Parent.....1 Guardian 2
A2	Date of interview	...../...../.....

Part B: Socio-Demographic Characteristics

QCODE	QUESTION	RESPONSES AND CODING
B1	Ward and Street/Village name	....., ...
B2	Residence	Rural .....1 Urban 2
B3	Sex of the head of the interviewee for which this child leaves	Male…….1 Female…….2
B4	How old are you?	[.....] years
B5	Date of birth of the child	[.....}

B6	Marital status of the mother	Married .....1 Single .....2 Divorced /separated.....3 Cohabiting 4
B7	The education level of the mother/guardian?	No education……..1 Primary incomplete…….....2 Primary complete…..…....3 Secondary+…….....4
B8	Occupation of the mother/guardian?	Agriculture .....1 Unskilled manual .....2 Skilled manual.....3 Technical/Professional.....4

Part C: Factors During pregnancy

QCODE	QUESTION	RESPONSES AND CODING
C1	During the pregnancy of this child were you smoking?	Yes .....1 No 2
C2	During the pregnancy of this child were you drinking alcohol?	Yes .....1 No 2
C3	During the pregnancy of this child did you happen to have any chronic diseases?	Yes, ...1 No…….....2

		Not sure……3
C4	Did you receive Vitamin A during pregnancy of this child?	Yes, ...1 No…….....2 Not sure……3
C5	Did you receive Iron supplements during pregnancy of this child?	Yes, ...1 No…….....2 Not sure……3
C6	How do you assess your household food security	1.Enough for the family.....1 2.Not sure.....2 3. Not enough.....3

Part D: Factors after child Birth

QCODE	QUESTION	RESPONSES AND CODING
D1	Birth weight?	….kg
D2	Current birth weight?	….kg
D3	Did your child did Exclusive breastfeeding for the first 6 months	1. Yes .....1 2. No 2
D4	Does your child have any difficulty during feeding practices	1.At birth Yes[ ]Never[ ] 2.1 month old Yes[ ]Never[ ] 3.Three months old Yes[ ]Never[ ] 4.At this moment Yes[ ]Never[ ]
D5	Does your child get any vaccinations	1. Yes .....1 2. No .....2 3. Not sure yet.....……3
D6	Frequency of eating	1.Every time.....1 2. Every time needed.....2

		3. Three times.....3 4. When food is available…4
D7	Do you think your household environment support child growth?	1. Yes .....1 2. No .....2 3. Not sure ….....……3

Part D: Factors after child Birth

Now I'm going to read TO you SOME few statements to estimate factors related to food assurance and Household income in relation to your child growth. Please tell me whether the statement was often, sometimes, or never true in the last 12 months referring to your household		
E4	"We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?	1.Often.....1 2.Sometimes.....2 3. Never true……3
E5	"We couldn't feed the children a balanced meal because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?	1.Often.....1 2.Sometimes.....2 3. Never true……3
E6	"The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?	1.Often.....1 2.Sometimes.....2 3. Never true……3
E7	In the last 12 months, did any of the children ever not eat for a whole day	1.Often.....1 2.Sometimes.....2

	because there wasn't food?	3. Never true……3
E8	"I worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for your household in the	I worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for your household in the last

Part F: Arthpomethic measurements

F1	Child current weight (Kg)	-------kg
F2	Child current Height (Cm)	--------cm
F3	BMI score	---- kg/m^2
F4	BMI (percentile range)	≥ 5 score…. Underweight 5 – 85…..Normal/Healthy weight 85 – 95……Overweight ≤95 score….Obesity
F5	*Standard formula to calculate BMI will be employed whereas the BMI indicator will be assessed by looking at (i) child being underweight, less than the 5th percentile (ii) healthy weight, 5th percentile up to the 85th percentile (ii) overweight, 85th to less than the 95th percentile, and (iii) has obesity equal to or greater than the 95th percentile.*	1. Underweight .....1 2. Healthy weight.....2 3. Obesity ……...3

Appendix III: Informed Consent -In-Depth Interview (English Version*)* - EGPAF Health care provider and Community Health Workers

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES - DIRECTORATE OF RESEARCH & PUBLICATIONS.

ID-NO: ...../......../.....

Consent to participate in this study

Greetings!! My name is **Frank Jasper Lyimo** from Muhimbili University of Health and Allied Sciences, Dar es Salaam. At the moment, we are carrying out a study to assess the determinants for early child development using evidence from early childhood development (ECD) Project implemented by EGPAF in Nzega District of Tabora Region

Purpose of the study and what Participation Involves

The researcher will use the interview guide to conduct a face to face in-depth interview to collect the following in-depth information; respondent's perception and opinions on socio-economic factors affecting early child development, using their experiences working with children explaining factors that are associated with early child development and related factors of nutritional factors and how they affect child development.

Confidentiality

I assure you that all the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will ensure that any information included in our report does not identify you as a respondent as we will not put your name or other identifying information on the records of the information you provide.

Risks

You will be asked questions about your personal particulars and understanding factors that determine early child development. Some questions could potentially make you feel

uncomfortable. You may refuse to answer any particular question and may stop the interview at any time.

Rights to Withdraw and Alternatives

Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve the loss of any benefits to which you are otherwise entitled.

Benefits

The information you provide us is extremely important and valuable. It will help to increase our understanding of the determinants for early child development using evidence from early childhood development (ECD) Project implemented by EGPAF in Nzega District of Tabora Region. There is no direct benefit however the r findings will

In case of injury

We are not anticipated that any harm will occur as a result of your participation in this study

Compensation

There will be no compensation of time spent during the interview; however, your participation is highly appreciated

Who to contact

If you have questions about this study, please don't hesitate to contact:

Frank Jasper Lyimo, The Principal Investigator Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam (Tel. no. 0769501830).

Chairman of Senate Research and Publications P. O. Box 65001, Dar es Salaam. Dr. Bruno Sunguyaand Dr. Mangi J. Ezekiel, The supervisor of this study.

Signature

Do you agree to participate and answer questions in this study?

Participant Agrees [__]

Participant Disagree [__]

I _____ have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of Participant _____

Signature of witness (if participant cannot read) _____

Thumb Print _____

Signature of research assistant _____

Date of signed consent _____

Appendix IV: Interview Guide List (English version) - EGPAF Health care provider

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES - DIRECTORATE OF RESEARCH & PUBLICATIONS.

1. How do you regard Early Childhood growth in your community?
2. In your opinion, Is EGPAF centers support early childhood growth in your community?
3. What are the socio-economic factors associated with child growth in your community?
4. To what extent do external factors like household income and food shortage and Hygiene related factors associated with child growth in your center/community?

Appendix V: Fomu Ya Ridhaa Kwa Ajili Ya Dodoso (Swahili Version)

CHUO KIKUU CHA SAYANSI ZA AFYA MUHIMBILI –KURUGENZI YA UTAFITI NA MACHAPISHO.

Namba: ...../......../……..

Ridhaa ya kushiriki katika utafiti huu

Habari! Jina langu naitwa Frank Jasper Lyimo natokea Chuo Kikuu cha Sayansi za Afya Muhimbili, Dar es Salaam. Nafanya utafiti kuangalia maswala yanayo husiana na ukuaji wa watoto wadogo katika vituo vinavyosimamiwa na mradi wa EGPAF-ECD (*Wazazi Nipendeni*) katika wilaya ya Nzega, mkoani Tabora.

Malengo ya utafiti

Utafiti huu una lengo la kukusanya taarifa kuhusu maswala yanayo husiana na ukuaji wa watoto wadogo katika vituo vinavyosimamiwa na mradi wa EGPAF-ECD (Wazazi Nipendeni) katika wilaya ya Nzega, mkoani Tabora. Na matokeo ya utafiti huu yatasambazwa katika majarida ya afya na katika taasisi za taaluma za afya ya binadamu

Ushiriki unahusisha nini na unafaida zipi?

Ushiriki wa mtoto, mazazi au mlezi katika utafiti huu ni wa hiari na una haki ya kukataa kushiriki ,na vilevile ukikubali kushiriki una haki ya kujiondoa katika utafiti muda wowote kama utapenda kufanya hivyo bila kutoa sababu yeyote,uamuzi wako wa kujitoa hautakuwa na madhara kwa mtoto wala mzazi. Faida za ushiriki wa mtoto na mzazi katika utafiti huu hautakuwa na manufaa ya moja kwa moja kwako wala kwa mtoto lakini taarifa utakayotupatia ni muhimu sana na yenye thamani kwa kuwa itasaidia kuelewa maeneo yanayohitaji kuboreshwa maswala muhimu yanayo husiana na ukuaji wa watoto wadogo.

Usiri

Nakuhakikishia kwamba taarifa zote zitakazokusanywa kutoka kwako zitakua ni siri, ni watu wanaofanya kazi katika utafiti huu tu ndio wanaweza kuziona taarifa hizi. Tutahakikisha ya kwamba taarifa zilizojumuishwa katika ripoti yetu hazitakuwa zinatoa utambulisho wako. Hatutaweka jina lako au taarifa yoyote ya utambulisho kwenye kumbukumbu za taarifa utakazotupatia.

Madhara

Hakuna madhara yoyote ya kimwili kwa wewe kushiriki katika utafiti huu.

Fidia

Hakutakuwa na fidia ya muda uliotumika wakati wa kufanya mahojiano au majadiliano katika utafiti huu, ijapokuwa kuwa ushiriki wako katika tafiti hii utashukuriwa na kuthaminiwa sana.

Mawasilano

Kama una maswaIi katika utafiti huu usisite kuwasiliana na:

Frank Jasper Lyimo, Mratibu mkuu wa utafiti huu, Chuo Kikuu Cha Afya Muhimbili, P.O. Box 65001, Dar es Salaam (Tel. no. 0769501830).

Mwenyekiti wa kamati ya chuo ya utafiti na machapisho, S.L.P 65001, Dar es Salaam. (Simu namba: 2150302-6) Daktari, Bruno Sunguya na Daktari Mangi J. Ezekiel, Msimamizi wa utafiti huu.

Maridhiano

Unakubali mtoto kushiriki na kujibu maswali ya tafiti hii?

Mzazi/Mlezi amekubali [__]

Mzazi/Mlezi amekataa [__]

Mimi _____ nimesoma/nimeielewa hii fomu, maswali yangu yamejibiwa. Nakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki _____

Sahihi ya shahidi (kama hawezi kusoma na kuandika) _____

Alama ya dule gumba(kama hawezi kusoma na kuandika)_____

Sahihi ya mtafiti msaidizi _____

Tarehe ya makubaliano _____

Appendix VI: Dodoso kwa Watoto (Litajibiwa na kusimamiwa na mzazi/Mlezi wa mtoto husika)

Dodoso la Ukuaji wa mtoto

Part A: Taarifa za Dodoso

Q CODE	QUESTION	RESPONSES AND CODING
AO	Number ya mtoto	[.....]
A1	Kwa niaba ya mtoto huyu	Mzazi.....1 Mlezi 2
A2	Tareha ya mahojiano	...../...../.....

Part B: Taarifa za msingi

QCODE	QUESTION	RESPONSES AND CODING
B1	Mtaa/Kijiji	....., ...
B2	Eneo	Kijijini .....1 Mjini….....2
B3	Jinsi ya mtoto	Kiume……..1 Kike…….2
B4	Umri wa mtoto kwa sasa?	[.....] Miezi
B5	Tarehe ya kuzaliwa	[.....}DD/MM/YY

B6	Hali ya ndoa ya ya mama/mlezi wa mtoto huyu	Ameolewa.....1 Hajaolewa.....2 Kaachika/kutengana.....3 Wanaishi 4
B7	Elime ya mama/mlezi?	Hajasoma……..1 Shuke ya masingi(hajamaliza)…….....2 Shule ya msingi(amemaliza)…...…....3 Sekondari+…….....4
B8	Kazi ya mama/Mlezi?	Kilimo .....1 Kibarua.....2 Ufundi.....3 Kazi ya Taaluma.....4

Part C: Wakati wa ujauzito wa mtoto huyu

QCODE	QUESTION	RESPONSES AND CODING
C1	Je mama ulikuwa unavuta sigari wakati ukiwa mjamzito kwa mtoto huyu?	Ndio .....1 Hapana.....2
C2	Je mama ulikuwa anakunywa pombe wakati ukiwa mjamzito kwa mtoto huyu?	Ndio .....1 Hapana.....2
C3	Je mama ulikuwa anaumwa	Ndio 1

	ugonjwa/magonjwa sugu wakati ukiwa mjamzito kwa mtoto huyu?	Hapana.....2 Sina uhakika…….3
C4	Ulipata Vitamin A wakati ukiwa mjamzito kwa mtoto huyu?	Ndio .....1 Hapana.....2 Sina uhakika…….3
C5	Ulipata madini ya chuma wakati ukiwa mjamzito kwa mtoto huyu?	Ndio .....1 Hapana.....2 Sina uhakika…….3
C8	Unatathiminije uwepo/ upatikanaji wa chakula katika kaya yenu?	1.Kutosha.....1 2.Sina uhakika.....2 3. Hakitoshi…….....3

Part D: Wakati baada ya kujifungua

QCODE	**QUESTION**	**RESPONSES AND CODING**
D1	Uzito wa mtoto wakati wa kuzaliwa?	……kg
D2	Uzito wa mtoto kwa sasa?	……kg
D3	Je mtoto wako alinyonya kwa kipindi cha Miezi sita(au anendelea kunyonya) ila kulishwa kitu kingine chocote?	1.Ndio .....1 2. Hapana.....2
D4	Je mtoto wako anachangamoto	1.Wakati wa kuzaliwa Ndio[]hapana[ ] 2.Mwezi mmoja Ndio[ ]hapana[ ]

	zozote wakati wa kula ?kunyonya?	3.Miezi 3 Ndio[ ]hapana[ ] 4.Kwa sasa Ndio[ ]hapana[ ]
D5	Je mtoto wako alipata chanzo ?	Ndio .....1 Hapana.....2 Sina uhakika…….3
D6	Ulaji wa mtoto	1.Kila wakati.....1 2.Kila wakati akilia.....2 3. Mara 3 ka siku.....3 4. Chakula/ maziwa yakiwepo……4
D7	Je unadhani mazingira ya nyumbani kwako yanamfanya mtoto akue vyema?	Ndio .....1 Hapana.....2 Sina uhakika…….3

Part E: Hali nyingine

QCODE	**STATEMENT**	**RESPONSES AND CODING**
E1	Unaweza kukadiria pato la mwezi katika kaya yako?	1.<100,000Ths 2.101,000-500,000Tsh 3. >500,000Tsh
E2	Je mtoto huyu anandugu zake wangapi	1.Hakuna.....1 2. Mmoja .....2 3. Wawli ….....……3 4. Watatu….....……4 5. Zaidi ya watatu……..…..5
E3	Jinsi ya mkuu wa kaya	Kiume……..1 Kike…….2

Nitasoma sentesi zifuatazo , nitaomba utoe maoni yako kama hali hizi zinatokea kila wakati , mara chache, au kila mara .		
E4	*"Mtoto na sisi hatukuweza kupata chakula cha uhakika" Je hali hii inatokea mara jingi, chance au haijawahi kutokea kabisa katika kaya yako katika kipindi cha Miezi 12 iliyopita?*	1.Kila mara.....1 2.Mara chache.....2 3.Haijawahi kutokea……..3
E5	*"Mtoto hajaweza kupata mlo kama inavyoshauriwa"*	1.Kila mara.....1 2.Mara chache.....2 3.Haijawahi kutokea……..3
E6	*"Watoto walikuwa wanakula kidogo kwa sababu chakula hakitoshi watoto wote"* "	1.Kila mara.....1 2.Mara chache.....2 3.Haijawahi kutokea……..3
E7	*"Watoto waliwahi kukosa kabisa chakula kwa siku nzima"* "	1.Kila mara.....1 2.Mara chache.....2 3.Haijawahi kutokea……..3
E8	*"Pesa ya kunun ulia chakula ilikuwa haitoshi"*	1.Kila mara.....1 2.Mara chache.....2 3.Haijawahi kutokea……..3

Part F: Arthpomethic measurements

F1	Uzito wa mtoto leo (Kg)	-------kg
F2	Komo cha mtoto leo (Cm)	--------cm
F3	BMI	--- kg/m^2
F4	BMI (percentile range)	≥ 5 score…. *Underweight* 5 – 85…..*Normal/Healthy weight* 85 – 95……*Overweight* ≤95 score….*Obesity*
F5	*Standard formula to calculate BMI will be employed whereas the BMI indicator will be assessed by looking at (i) child being underweight, less than the 5th percentile (ii) healthy weight, 5th percentile up to the 85th percentile (ii) overweight, 85th to less than the 95th percentile, and (iii) has obesity equal to or greater than the 95th percentile.*	1. *Underweight* .....1 2. *Healthy weight*.....2 3. *Obesity* ……...3

Appendix VII: Fomu Ya Ridhaa - Mahojiano (Swahili Version)-Watoa huduma wa vituo vya EGPAF

CHUO KIKUU CHA SAYANSI ZA AFYA MUHIMBILI –KURUGENZI YA UTAFITI NA MACHAPISHO.

Namba: ...../...../

Ridhaa ya kushiriki katika utafiti huu

Habari! Jina langu naitwa Frank Jasper Lyimo natokea Chuo Kikuu cha Sayansi za Afya Muhimbili, Dar es Salaam. Nafanya utafiti kuangalia maswala yanayo husiana na ukuaji wa watoto wadogo katika vituo vinavyosimamiwa na mradi wa EGPAF-ECD (*Wazazi Nipendeni*) katika wilaya ya Nzega, mkoani Tabora.

Malengo ya utafiti

Utafiti huu una lengo la kukusanya taarifa kuhusu maswala yanayo husiana na ukuaji wa watoto wadogo katika vituo vinavyosimamiwa na mradi wa EGPAF-ECD (Wazazi Nipendeni) katika wilaya ya Nzega, mkoani Tabora. Na matokeo ya utafiti huu yatasambazwa katika majarida ya afya na katika taasisi za taaluma za afya ya binadamu

Ushiriki unahusisha nini na unafaida zipi?

Ushiriki wa mtoa huduma au mlezi wa kituo (EGPAF-ECD -Wazazi Nipendeni) katika utafiti huu ni wa hiari na una haki ya kukataa kushiriki ,na vilevile ukikubali kushiriki una haki ya kujiondoa katika utafiti muda wowote kama utapenda kufanya hivyo bila kutoa sababu yeyote,uamuzi wako wa kujitoa hautakuwa na madhara kwa mtoto wala mzazi. Faida za ushiriki wa mtoto na mzazi katika utafiti huu hautakuwa na manufaa ya moja kwa moja kwako wala kwa mtoto lakini taarifa utakayotupatia ni muhimu sana na yenye thamani kwa kuwa itasaidia kuelewa maeneo yanayohitaji kuboreshwa maswala muhimu yanayo husiana na ukuaji wa watoto wadogo.

Usiri

Nakuhakikishia kwamba taarifa zote zitakazokusanywa kutoka kwako zitakua ni siri, ni watu wanaofanya kazi katika utafiti huu tu ndio wanaweza kuziona taarifa hizi. Tutahakikisha ya kwamba taarifa zilizojumuishwa katika ripoti yetu hazitakuwa zinatoa utambulisho wako. Hatutaweka jina lako au taarifa yoyote ya utambulisho kwenye kumbukumbu za taarifa utakazotupatia.

Madhara

Hakuna madhara yoyote ya kimwili kwa wewe kushiriki katika utafiti huu.

Fidia

Hakutakuwa na fidia ya muda uliotumika wakati wa kufanya mahojiano au majadiliano katika utafiti huu, ijapokuwa kuwa ushiriki wako katika tafiti hii utashukuriwa na kuthaminiwa sana.

Mawasilano

Kama una maswaIi katika utafiti huu usisite kuwasiliana na:

Frank Jasper Lyimo, Mratibu mkuu wa utafiti huu, Chuo Kikuu Cha Afya Muhimbili, P.O. Box 65001, Dar es Salaam (Tel. no. 0769501830).

Mwenyekiti wa kamati ya chuo ya utafiti na machapisho, S.L.P 65001, Dar es Salaam. (Simu namba: 2150302-6) **Daktari, Bruno Sunguya na Daktari Mangi J. Ezekiel**, Msimamizi wa utafiti huu.

Maridhiano

Unakubali mtoto kushiriki na kujibu maswali ya tafiti hii?

Mzazi/Mlezi amekubali [__]

Mzazi/Mlezi amekataa [__]

Mimi _____ nimesoma/nimeielewa hii fomu, maswali yangu yamejibiwa. Nakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki _____

Sahihi ya shahidi (kama hawezi kusoma na kuandika) _____

Sahihi ya mtafiti msaidizi _____

Alama ya Dole Gumba _____

Tarehe ya makubaliano _____

Appendix VIII: Orodha Ya Maswali Kwa Ajili Ya Mahojiano (Swahili Version)

CHUO KIKUU CHA SAYANSI ZA AFYA MUHIMBILI –KURUGENZI YA UTAFITI NA MACHAPISHO.

1. Je wewe kama mtoa huduma, nini maoni yako kuhusu mendeleo ya mtoto katika ukuaji?
2. Jekwa maoni yako unafikiri vituo vya EGPAF vinasaidia ukuaji mzuri wa watoto?
3. Je ni kwa kiasi gani mazingira ya nyumbani yanahusiana na ukuaji wa mtoto?
4. Je ni kwa kiasi gani unafikiri maswala yanayohusu usalama wa chakula na uhakika wa
5. Je unafikiri ni mambo gani yanaweza kuadhiri ukuaji mzuri kwa mtoto?

Appendix IX: Approval of ethical clearance

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz

Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/

22nd July, 2019

Mr. Frank Lyimo
MPH-Distance Learning
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "DETERMINANTS OF EARLY CHILDHOOD GROWTH: A CASE STUDY OF EARLY CHILDHOOD DEVELOPMENT (ECD) PROJECT IN NZEGA DISTRICT, TABORA REGIN, TANZANIA"

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from **17th July, 2019 to 16th July, 2020.** In case you do not complete data analysis and dissertation report writing by **20th July, 2020,** you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
ACTING: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Public Health and Social Sciences, MUHAS

Appendix X: Introduction letter

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
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P.O. Box 65001
DAR ES SALAAM
TANZANIA
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Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. HD/MUH/T.338/2016

22nd July, 2019

Elizabeth Gloser Pediatric AIDS Foundation (EGPAF)
P.O. Box 600
TABORA.

Re: INTRODUCTION LETTER

The bearer of this letter Mr. Frank Lyimo a student at Muhimbili University of Health and Allied Sciences (MUHAS) pursuing MPH-Distance Learning.

As part of his studies he intends to do a study titled: "***Determinants of early childhood growth: A Case study of early childhood development (ECD) project in Nzega District, Tabora Region, Tanzania,***

The research has been approved by the Chairman of University Senate.

Kindly provide him the necessary assistance to facilitate the conduct of him research.

We thank you for your cooperation.

Ms. Sharifa Kamby
For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public health and Social Sciences.

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
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Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. HD/MUH/T.338/2016

22nd July, 2019

District Medical Officer
Nzega District Council
P.O. Box 4
Nzega-**TABORA.**

Re: INTRODUCTION LETTER

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As part of his studies he intends to do a study titled: "***Determinants of early childhood growth: A Case study of early childhood development (ECD) project in Nzega District, Tabora Region, Tanzania,***

The research has been approved by the Chairman of University Senate.

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For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public health and Social Sciences.