ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
ALLIED SCHOOL OF HEALTH SCIENCES
DEPARTMENT OF NURSING AND MIDWIFERY

PREVALENCE OF STUNTING AND ASSOCIATED FACTORS AMONG CHILDREN AGED 6-59 MONTHS IN MERHABETE WOREDA NORTH SHOWA, 2017.

PREINCIPAL INVESTIGETER: - SHIFERAW ABEWAY (BSC)

A THESIS TO BE SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, DEPARTMENT OF NURSING AND MIDWIFERY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN PEDIATRICS AND CHILD HEALTH NURSING

ADDIS ABABA
JUNE, 2017

ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
ALLIED SCHOOL OF HEALTH SCIENCES,
DEPARTMENT OF NURSING AND MIDWIFERY

PREVALENCE OF STUNTING AND ASSOCIATED FACTORS AMONG CHILDREN AGED 6-59 MONTHS IN MERHABETE WOREDA NORTH SHOWA, 2017.

BY: - SHIFERAW ABEWAY (BSC)

ADVISOR: - 1. BEREKET GEBREMICHAEL (BSC, MSC)

2. RAJALAKSHMI MURUGAN (BS.C, MSC, ASSIT.PROF.)

A THESIS TO BE SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, DEPARTMENT OF NURSING AND MIDWIFERY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN PEDIATRICS AND CHILD HEALTH NURSING

ADDIS ABABA

JUNE, 2017

APPROVAL SHEET

ADDIS ABABA UNIVERSITY

SCHOOL OF NURSING AND MIDWIFERY GRADUATE STUDIES

I hereby certify that I have read and evaluated this research thesis entitled prevalence of stunting and associated factors among children aged 6-59 months in merhabete woreda north showa, 2017 prepared under my guidance by Shiferaw Abeway.

Shiferaw Abeway _____

_____

Principal investigator Signature Date

I recommend that it is submitted as fulfilling the requirements of research thesis.

_____ _____ _____

Advisor Signature Date

_____ _____ _____

Advisor Signature Date

As a member of the Msc research open defense examination, I certify that I have read and evaluated the thesis prepared by Shiferaw Abeway and examined the candidate. I recommend that the thesis be accepted as fulfilling the proposal requirements for the degree of masters of Science in pediatrics and child health nursing.

_____ _____ _____

Examiner Signature Date

Acknowledgement

First and foremost, I would like to express my deepest gratitude to my advisors, Mr. Bereket Gebremichael (BSC, MSC) and Ms. Rajalakshmi Murugan (BSC, MSC, Assit.prof.) who assisted me during the development of this thesis by providing technical advices, different literatures, tools and websites for the potential enrichment of the thesis. I really appreciate their genuine guidance and initiatition for the development of this thesis.

I am also thankful to ICT department, Postgraduate Library, Institute of public health, College of Medicine and Health sciences, Addis Ababa University for accessing internet service and thesis papers done on different themes as reference.

I would like to acknowledge Merhabete woreda administrative office and all kebeles for their permission to collect data, supervisors and nurses that help me by collecting data through interview and by measuring height and length of child and in last I thank all respondents of the study for their willing and genuine response.

Last but not least, my thanks also go to the authors of articles and materials I used in this thesis

Table of Contents

List of figures

List of tables

Acronyms and abbreviation

ANC	Antenatal care
BSC	Bachelor of Science
BF	Breast feeding
DRC	Democratic republic of Congo
EBF	Exclusive Breast Feeding
EDHS	Ethiopian Demographic and Health Survey
ENA	Emergency nutritional assessment
GO	Governmental Organization
HAZ	Height -for-age
HEW	Health extension worker
IRB	Institutional Review Board
IYCF	Infant and Young Child Feeding
NGO	Non-Governmental Organization
PNC	Postnatal care
SDG	Sustainable development goal
SSSF	Solid, Semi Solid and Soft Food
SPSS	Statically package for social science
UNICEF	United Nations Children's Fund
WHO	World health organization

Abstract

Background: - Stunting reflects chronic under nutrition during the most critical periods of growth and development in early life. Children whose height-for-age Z-score was below minus two standard deviations from the median of the World Health Organization reference population were considered short for their age (stunted), or chronically malnourished. Children who were below minus three standard deviations were considered severely stunted. Height-for-age, therefore, represents the long-term effects of malnutrition in a population and was not sensitive to recent, short-term changes in dietary intake.

Objectives: - The study was aimed to assess the magnitude of stunting and associated factors among children aged 6-59 month in Merhabeta woreda, North Shewa, Ethiopia.

Methods: - A community based cross-sectional study was conducted among 410 children aged between 6-59 months. Systematic random sampling technique was employed to select study subject. Interviewer administered structured questionnaires was used to collect data. The data was entered using EPI INFO version 3.5.1 and analysis was done by SPSS version 20 and ENA, 2007software for anthropometric calculation. Bivariate and multivariable logistic regression analysis was used. Statistical significance was declared at $p<0.05$ and 95%CI.

Result: - The overall magnitude of stunting was 52.4 95%CI (47.6-57.2). Among the total number of stunted children, 110(51.2%) were female. In multiple logistic regression analysis factors that were significantly associated with stunting were, sex of the child, age of the child, educational status of the mother, ANC visits of the mother, didn't have timely initiation of complementary feeding and birth weight Children within age group 24-59 months were 4 times more likely to be stunted AOR (95%CI) 4(1.88-8.42), children who did not timely initiation of complementary feeding practice were AOR (95%CI (2.4(1.27-4.61) and 0.01(1.27-4.61) respectively. and mothers who had no ANC follow up were 3.2 times more likely to be stunted than mothers had for tines ANC follow up AOR (95%CI) 3.2(1.405-7.100).

Conclusion: - Stunting was a highly prevalent problem in the study area with child's age. Mother's education, age of complimentary food started, size at birth, sex of children, age and antenatal care follow up were found to be associated factors of stunting.

Recommendation: - in the study area, need to plan nutrition interventions to effectively address the nutritional conditions with participation of stakeholders and community at large

Key Words: Stunting, Healthcare, Diet, Children, Merhabete

CHAPTER ONE

1. INTRODUCTION

1.1 Background

Globally, under nutrition accounts directly or indirectly for at least 35% of deaths in under five aged children(1). It affects physical growth, contributes for morbidity and mortality, reduces cognitive development, reproductive and physical work capacity(1). Malnutrition results from unbalanced diet that does not contain all the necessary nutrients and/or inadequate or excessive consumption of nutrients. It can also result from diseases that interfere with the body's ability to use the nutrients consumed and those malnourished children have lowered resistance to infection(2).

Stunting reflects chronic under nutrition during the most critical periods of growth and development in early life. Children whose height-for-age Z-score is below minus two standard deviations (−2 SD) from the median of the World Health Organization (WHO) reference population are considered short for their age (stunted), or chronically malnourished. Children who are below minus three standard deviations (−3 SD) are considered severely stunted. Height-for-age, therefore, represents the long-term effects of malnutrition in a population and is not sensitive to recent, short-term changes in dietary intake(3). Stunting is an indicator of chronic malnutrition, meaning long-term or accumulated nutritional deficiency resulting from lack of adequate dietary intake over a long period of time and/or recurrent illness.

Progress in reducing childhood malnutrition in developing countries has been slow. The larger burden for Africa is stunting that is the failure to grow in stature(4, 5). The percentage of children stunted is higher in rural areas 40% than in urban areas 25%. There is regional variation in the prevalence of stunting in children. Stunting levels are above the national average in Tigray and Affar (46% each), SNNP 44% and Amhara 46% and relatively low in Gambela and Addis Ababa (22% and 23%, respectively)(3).

Therefore determining the magnitude and factor contributing to stunting among under five children are important as they constitute a potentially susceptible group. Furthermore growth assessment is an important tool for monitoring health and nutritional status of children and identifying deviations from normality, also provides an indirect measurement of well-being for the entire population(6, 7).

Good nutrition is a prerequisite for the national development of countries and for the well-being of individuals. Although problems related to poor nutrition affect the entire population, women and children are especially vulnerable because of their unique physiology and socioeconomic characteristics. Adequate nutrition is critical to children's growth and development. The period from birth to age two is especially important for optimal physical, mental, and cognitive growth, health, and development. Unfortunately, this period is often marked by protein energy and micronutrient deficiencies that interfere with optimal growth(8).

1.2. Statement of the problem

Malnutrition is a major cause for more than 2.6 million child deaths every year, a third of the total of child deaths. Every hour of every day, 300 children die because of malnutrition but it's not recorded on death certificates and, as a result, it's not effectively addressed(5, 9). Worldwide, 165 million children below five years of age is affected with under nutrition, of which 26% are stunted(10). This figure reduced by 35% from 253 million in 2010. The prevalence of stunting is 36% in Africa and 27% in Asia. More than 90% of stunted children in the world have been living in Africa and Asia.(10)

Stunting rates among young children is the highest in sub-Saharan Africa. About 46.5% of the children are stunted out of them half of them are severely stunted (WHO, 2011). According to 2016 Ethiopian Demographic and health survey (EDHS) the prevalence of stunting children under age of five is 38% and in 2000 it was 58% (11) and the percentage of children stunted is higher in rural areas 40% than in urban areas 25%(3, 11). This shows that the rate of stunting in Ethiopia is still higher than the reported percent for developing countries.

In Ethiopia, child malnutrition rate is one of the most serious public health problem and the highest in the world. High stunting rates in the country pose a significant obstacle to achieve better child health outcomes. According to recent study which was conducted in Amhara region the prevalence of child stunting , in west Gojam is 14.3%), in south east Amhara region 31.1%, and in lalibela 51.1%(1, 12, 13).

Stunting is one of the most important health and welfare problems among infants and under five children in Ethiopia. Even though the prevalence of chronic malnutrition in the last eleven years has decreased significantly, children under five years of age still experience one of the highest rates of malnourishment in the world (5). Moreover, high prevalence of stunting jeopardizes future economic growth by reducing the intellectual and physical potential of entire population. Stunting among children remains common in many parts of the world(14).

In fact, malnutrition was the underlying cause of 57% of child deaths in Ethiopia with some of the highest rates of stunting in the world. Contributing factors to stunting include widespread poverty, limited employment opportunities, poor infrastructure, high population pressure, low education levels, inadequate access to clean water and sanitation, high rates of migration and poor access to health services. Without increased efforts to improve the nutritional status of vulnerable groups such as mothers and children under five years old, it is difficult and risks falling of halving underweight and reducing child stunting(14).

The effort to reduce underweight has been shifting to prevention of stunting due to better understanding of nutrition. Based on this, WHO targeted to reduce stunted under five children by 40% in 2025(4). Likewise, the government of Ethiopia had planned to reduce the prevalence of stunting from 44.4% to 30% by 2015(11). However, massive and similar interventions at national level could not have an overwhelming result in reducing under nutrition problems including stunting. Besides, different organizations have been running many developmental activities so as to improve the nutritional status and livelihood of the society but the rate of stunting is still higher according to the report of EDHS of 2016 which is 38% (11).

Tackling child stunting remains a pressing challenge that requires improved food security, behavioural and attitudinal changes and improvements to basic services (Save the Children, 2013)(15). Problems can be actually being inevitable when a certain activity is in place since the child stunting is still the major public health problem in Ethiopia. In recent years Ethiopia has only had limited success in reducing the prevalence of stunting with annual reduction of 1.3% over the past eleven years from 58% in 2000 to 44% in 2011 and 40% in 2014(5). It is believed to be influenced by some factors and there is still a huge gap in achieving the goal of stunting. However, the prevalence of stunting and its predictors is not well identified in this study area. Therefore, this study was conduct to determine the magnitude of stunting and associated factors in Merhabete woreda North Shewa, Ethiopia.

1.3. Significant of the study

The identification of possible factors for the occurrence of stunting in the area have greater input to program managers and policy makers for designing, proper implementation and evaluation of programs on reduction of child mortality and improvement of child health to achieve sustainable development goal (SDG) 3 of ensuring healthy lives and promote well-being for all at all age.

So that the information generate is useful in designing appropriate interventions to improve nutritional status of under five children thus reducing child stunting in the target area and other similar area. The study would also contribute knowledge to the on-going research efforts on childhood malnutrition. As far as the researcher knowledge is concerned and literature review showed, there were no published researches available in this study area. Therefore, the main aim of this study was to determine the prevalence of stunting and factor associated with it in Merhabeta woreda. In addition, the study was help to suggest interventions to be designed in order to improve quality of child health care specifically on growth monitoring activities for nursing profession. Furthermore, the finding was also creating awareness in the community, health institution and health care providers to formula local appropriate interventions to prevent stunting among children.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Magnitude of the problem

The World Health Organization (WHO) reports that stunting is one of the most important indices of child well-being throughout the world(16). Globally, an estimated 171 million children do not have the opportunity to reach their full potential because of poor nutrition in the earliest months of life. In developing countries approximately 32%, or 186 million children <5 years of age are stunted(5, 16). According to the latest United Nations estimates, about 165 million children under 5 years of age, or 26%, are stunted in 2011. More than 90% of the world's stunted children live in Africa and Asia, where respectively 36% and 27% of children are affected(17).

According to study conducted in India the prevalence of stunting under five children in 2015 was 59.3%(18). A population-based cross-sectional study conducted In Pakistan, 8% of children stunted in 2011(19) and in Sri Lanka 15% under five children were affected from stunting in 2015(20).Another community based cross-sectional study which was conducted in Brazil, prevalence of stunting among children under five years old in 2014 was 62% (21) and in Bangladeshi 41% under five children are stunted(22), in China14%) and in Nepal 36% (23).

Based on 2015 global nutrition report of Africa 58 million children under age five are too short for their age (stunted) (24). Another study which is conducted in tribal children in India was 57%(25). Under-nutrition of children is unfortunately still very common in many parts of Africa. For example, 42% of the children in sub-Saharan Africa are stunted (i.e., have a low height for their age) - an indicator of chronic under-nutrition (UNICEF 2011)(26). Prevalence of stunting in Nzega District, Rural Tanzania 26.1% in 2015(27), in Zambia 44.5%(28),in Kenya 39%(29), in Nigeria 46.7%(30), in Egypt 20.3% (17), in Democratic Republic of Congo 43.9%(5) and in Uganda 41.6 % (4).

The magnitude of stunting In Ethiopia was one of the highest from sub-Saharan Africa countries. According to study conducted in Wondo Genet Woreda, Sidama zone, Southern Ethiopia in 2015 the prevalence of stunting was 50.3%(16). And in West Gojam Zone 43.2% under five children are suffer from stunting(31). Another study which was conducted by Behailu Tariku, Afework Mulugeta, Mache Tsadik and Girma Azene in South East Amhara

rejoin indicates the prevalence of stunting is 60.6% (12), in Southern rejoin of Hawasa 26.6%(1), in Bure Town North west Ethiopia24.9%),(10) and in North Shewa, Oromia Regional State 47.6%(32).

According to EDHS 2016, 38 % nationally, 25 % in Urban and 41% in rural areas(3). There is regional variation in the prevalence of stunting in children. Stunting levels were above the national average in Tigray and Affar (46 percent each), SNNP (44 percent) and Amhara (42 percent), and relatively low in Gambela and Addis Ababa (22 and 23 percent, respectively)(3).

2.2. Factors associated with stunting

2.2.1. Demographic factors

A community based cross-sectional study conducted in Brazilian semi-arid region indicated that the level of stunting increases with increasing age of child (95% CI: 9.3 to 12.4)(33). Another study conducted in Hawsa town, children who are aged above 24 months are about 4 times more likely to be stunting than below 12 months old ones (AOR=3.97 [95%CI, 1.30-12.11])(1). Study in oromia rejoin, children age group 13-24 months are about 7 times more likely to be stunted than children age 6-11 months(AOR=7.15; 95%CI=2.33,21.90) (32).

Another community based cross-sectional study conducted in Pakistan, the male-female ratio was 1.11 with 52.5% boys and 47.5% girls(19). Study conducted in Ethiopian Somalia female was stunted 1.47 times than male (AOR: -s1.47, 95% CI 1.02, and 2.11)(34). In Llibela town the study confirms that high prevalence of stunting in boys (25.5%) than girls (21.8%)(13). Female children are about 0.75 times less likely to be stunting compared to male children (AOR=0.74; (95%CI: 0.56-0.98)(13). A community based cross sectional study in Eastern Ethiopia investigate that, the male–female ratio is 1.34 with 57.3% boys and 42.7% girls(7). In contrast the studies conducted in Hawassa Town(1), in Northern Province(35), in Pakistan(19) and in South East Amhara Ethiopia(12) suggested that, there is no significant difference in prevalence of stunting by sex of the child.

Study conducted in Egypt indicated that, higher levels of stunting are found in children of higher birth order (24.31% for birth order 5 vs. 17.26% birth order 1)(17). Another study in Wendo Genet wereda, sidama zone, southern Ethiopia birth order 5-12 are 3.2 times more likely to be stunted than those with birth order ≤ 5 (AOR= 3.19 [95%CI: 1.64-6.21])(16).

Study conducted in Brazil show that, children whose preceding birth interval is less than two years are 1.5 times more likely to be stunting as compare with children whose preceding birth interval is 48 months and more(33). According to 2016 EDHS With the exception of first births, there is an inverse relationship between the length of the preceding birth interval and the proportion of children who are stunted(11). The longer the interval, the lower the proportion of children stunting(3). But in contrast the study conducted in Hawassa University Technology Villages, Southern Ethiopia indicates that the birth gap does not show association with stunting(1).

In Mexico, the average age of the mothers of the children under age 2 is between 26.4 and 27.6 years, and no significant differences between the mothers of children with stunted height and normal children are noted(36). However, in the group of mothers of children older than 24 months, there is a significant difference ($p = 0.03$) in favour of the mothers of children with a normal nutritional status and that are older (29.7 years old versus 27.9)(37). In Nepal, when maternal age at pregnancy is more than 55 Years, there is 2.6 times risk of stunting in the children [OR= 2.615 (1.139<OR<6.005)(38). Study conducted in Nairobi Kenya suggested that, mothers' age do not determine stunting (29)

A 2015 study in Zambia shows that stunting in children is high among mother's aged 20–24 and 40–44 years (49.7 percent and 56.9 percent respectively p=0.007)(28). Study in the Case of Hawassa University Technology Villages, Southern Ethiopia mother's age during child birth (than 21 years significantly associated with stunting with odds of (COR=2.55 [95CI, 1.20-5.42]), (COR=1.80 [95CI, 1.05-3.08])(1).

In Zambia, children living in households where mother's report their marital status as " living together" and "never been married" are less likely to be stunted (27.3 percent and 29.9 percent) compare to those mother's report either as widowed or divorced (74.2 percent and 57.4 percent) respectively ($p<0.001$). But In DRC there is no statistically significant association observed between the prevalence of stunting and mother's marital status(36).

2.2.2. Socio-economic factors

Study in Brazil, the prevalence of stunting is 10.9% (95% CI: 9.3-12.4). This prevalence is higher for children whose mothers has 0-4 years of schooling(33). In Zambia, Children whose mothers have attained higher education are less likely to be stunting (about three in every ten compared to about five in every ten with primary education; p=0.058)(28). In Bangladesh, Father's education shows an inverse relationship with severe stunting and moderate stunting over normal. For instance, as compared to the children whose fathers has higher education, the children whose fathers has a secondary level of education, primary education and no formal education are 1.5 times, 1.9 times and 2.3 times as likely as to be severely stunning respectively(39). But another study in Sri Lanka show that, maternal educational status is not associated with the prevalence of stunting(40).

A study which is conducted in Sidama Zone Ethiopia, paternal education, those children in house hold of paternal education level 7-8 grade are more likely to be stunted than paternal education level above and below these grades. AOR= 2.29 [95% CI: 1.15-4.54])(16). In

Ethiopia study showed the likelihood of being stunted is also 1.4 times higher among children of father who has no education compared with children whose father has some secondary or higher education. And the mother's level of education has an inverse relationship with stunting levels. For example, children of mothers with more than secondary education are the least likely to be stunted (8 percent), while children whose mothers have no education are the most likely to be stunted (43 percent) (3, 5, 28).

Education of women is believed to exert an impact on health and nutritional status of children since it provides the mother with the necessary skills for child care, increase awareness of nutritional needs and preference of modern health facilities as well as change of traditional beliefs about diseases causation, and use of contraceptives for birth spacing(32).

In Bangladeshi, household's wealth index shows a highly statistical significant inverse association with being severely and moderately stunting over normal. The likelihood of being severely stunted is 4.1 times, 3.5 times, 2.3 times and 1.9 times respectively among children from the poorest, poorer, medium and the richer than those of the richest families. In addition, the comparison of odds ratios revealed that as compared to the children from the richest households, the children from the poorest, poorer, medium and the richer households were 2.3 times, 2.3 times, 1.9 times and 1.8 times as likely as to be moderately stunted over normal than the children who were from the richest households(39). Study in Sri Lanka, Prevalence of food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger in households are 48.9%, 40.5%, 8.7% and 1.8%, respectively(20). Prevalence of stunting in under five children is significantly associated with their household food security status(20).

A community based case control study shows in Nepal; families with poor economic status are higher among cases (62.7%) than controls (39.8%). Most of the families (65.3%) with cases had no food security compared with the families (35.6%) having controls(38). Study conducted in Kenya(29) and Sidama Zone no significant association between under five children nutritional status (stunting) and socio economical factors(16). In southern Ethiopia Low monthly income (less than500 ETB), mother's age during child birth (than 21 years significantly associate with stunting with odds of (COR=2.55 [95CI, 1.20-5.42]), (COR=1.80 [95CI, 1.05-3.08])(1).

2.2.3. Environmental factors

Study which is conducted in Pastoral Community of Korahay Zone, Somali Regional State, Ethiopia 2016, using unprotected well (AOR: 3.41, 95% CI 1.96, 5.93) as source of water supply showed significant association with stunting(34).

Mizan-aman town, bench maji zone Ethiopia, also confirms that children whose drinking water is from a non-improved water source are more likely to be stunted than children with access to an improved water source(5). Study conducted in rural Somalia confirms that, toilet facilities availability had significant association with risk of being stunted (AOR: 1.71, 95% CI 1.13-2.58).

2.2.4. Health care factors

According to the study conducted in Nepal indicated that, children who are very small at birth (low birth weight) has a higher prevalence to be stunting than children with normal size(38). In Kenya, 62 % of children who had low birth weight (less than 2500) were stunted compared to 36 % of the children who were of optimal weight (above 2500)(29). Study in Sri Lanka confirm that birth weight has a direct relationship with prevalence of the child(40). Based on study in East Welega zone confirm that children whose birth weight are perceived as below average are 1.9 times more likely exposed for risk of stunting than children whose birth weight are perceived as average and above ($P<0.01$)(41).Study conducted by save the children in Ethiopia show that, Infants and children reported to have a very small birth size are twice (2.02) as likely to be stunted as those that are very large at birth(15).

The study in Nepal show that, the proportion of stunting children are slightly higher for unimmunized children(38). Study in Brazil confirm that no significant relation of immunization with that of stunting (33). Study in wendo genet wereda southern Ethiopia, justify that immunization is directly associated with stunting(16). A community based cross-sectional study which is conducted in East Welega zone confirm that, those children did not take complete vaccine were 1.7 times more likely to be wasted (AOR=1.73, 95%CI: 1.20-1.97) than those who took the complete vaccine(41).

Study in Brazil show that, stunting is 44.2% in children with diarrhoea and 27.4% without diarrhoea, OR = 2.10 [95% CI, 1.110-3.972], P = 0.026)(33).The study in Gojam showed that, Children experiencing diarrhoea are 2.3 times more likely to be stunted compared to children without diarrhoea(31). In contrary study conducted in Ethiopia indicated, the association is not statistically significant(31).

Study in Nepal, stunting is significantly associated with the frequency of antenatal care visit(38). In Zambia Children whose mothers has attend antenatal clinics less than three times and four or more times has reduced odds of being stunted (AOR=0.562, 95%CI: 0.294, 1.074; p=0.081 and AOR=0.483, 95%CI: 0.255, 0.917; p=0.026) compared to those whose mothers are not attend(28). Study conducted in South East Amhara Rejoin indicated that there is significant association between antenatal care visit and stunting with[AOR = 1.837 at 95% CI (1.115, 3.025)](12). In contrast studies conducted in India(25), in Sri Lanka(20) and Egypt(42) no significant association between stunting and antenatal care.

Study conducted in Pastoral Community of Korahay Zone, Somali Regional State, Ethiopia 2016 showed that, those mothers who hadn't postnatal visits 1.2 times more likely to be stunted than who had post natal visit (AOR: 1.59, 95% CI 1.07, 2.37) (34).

In Nepal effect of place of delivery not as much as significant association with stunting (43). Another study in Zambia, findings shows that, four in every ten children whose mothers delivered at a health facility are likely to be stunted than those whose mothers delivered at home five in every ten p=0.038(28). In Nairobi Kenya study indicated that the odds of stunting for a child born to a mother who gives birth at home are 39 % higher compared to giving birth in a health facility (P<0.05)(5). Study in Sidama Zone, justify that a significant association between place of delivery and stunting(16).

2.2.5. Dietary factor

Study in Zambia Children (6–23 months) who are not being breastfed are more likely to be stunted compared to those who reported being breastfed at the time of delivery (AOR=1.384, 95%CI: 1.067, 1.796; p=0.014)(28). Another study in Hawasa town, shows that shorter length of breast feeding is contributed for stunting (COR=3.04, [95% CI, 1.19 8.06])(1). In contrary study in Gojam indicate, there is no significant difference in prevalence of stunting by initiation of breastfeeding after delivery(5).

Study in India indicate that stunting among children who are feed Colostrum (42.1%) is significantly less (P<0.01) than that among those who are not fed Colostrum (59.0%)(5). study in Hawasa town, colostrums feeding has increased the odds of stunting significantly (p<0.05)(1). Another study in west Gojam, Colostrum feeding and stunting is found highly significant (p<0.001) for children under age five. More children deprived of Colostrum (52.0%) are stunted than children who received it(31).

In Belgaum, the association pre lacteal feeding is statistically significant (p=0.014). children who receive pre-lacteal feeds suffered from stunting compare to those who does not receive (p=0.006)(44). In West Gojam, children who receive pre-lacteal feeding are found to be at significantly higher risk of stunting than children who did not. It is noticed that children who receive pre-lacteal feeding are 1.8 times more likely to be stunted than children who did not receive pre-lacteal feeding at the time of birth(31).In North Shewa oromia rejoin, Regarding the association of pre-lacteal feeding with stunting, children who are fed butter as pre-lacteal feeding are about 3 times more likely to be stunted compare to children who receive water with sugar by their mothers/care taker (AOR=3.102;95%CI=1.82,5.31)(32).

In Khartoum, breastfeeding duration can protect the child's nutrient deviancies and to avoid contaminated food especially for young children significant correlation is observed between duration of breastfeeding and prevalence of stunting (p value = .000)(45). In west Gojam, a significantly higher prevalence of stunting (48.7%) is observe among children who are breastfed between 1 and 2 years than among children breastfed for less than 1 year(31).But in contrast study in Brazil(33) and in Bangladeshi(22)there is no significant association between shunting and duration of breast feeding.

Study conducted in west Gojam show that, there is significantly more stunting among children who are bottle fed (49.8%)(31). But study in Hawasa town confirms that bottle feeding of children has no association with the presence of stunting(1).

The study conducted by Disha et al show that, infant young and child feeding practices related to complementary feeding are positively and significantly ($p<0.05$) associated with under nutrition indicators, particularly HAZ(5). Study in Gojam indicate that, age of the child when complementary foods are start has a highly significant negative association with long-term nutritional status(10).

3. Conceptual framework

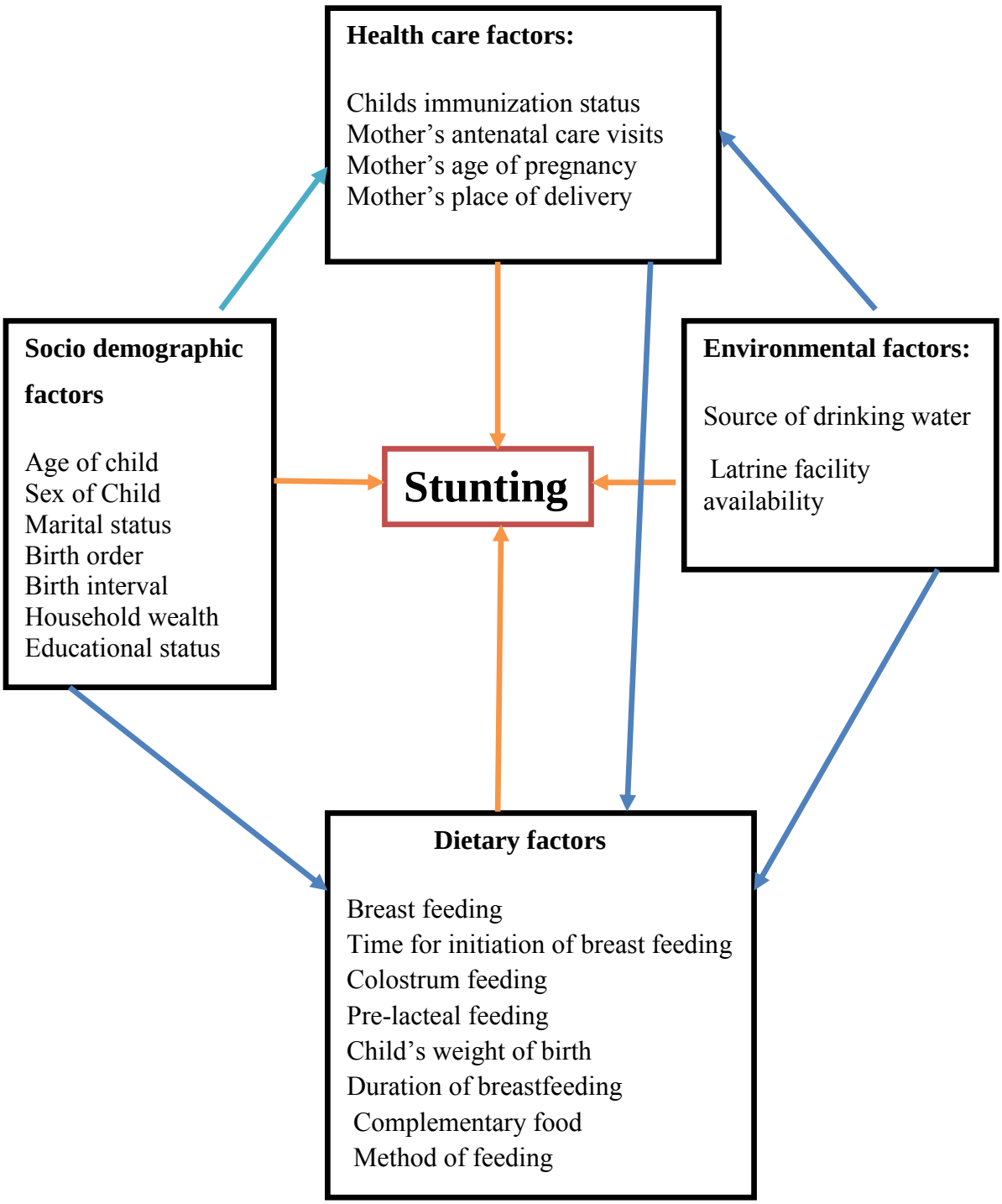


Figure 1: Conceptual framework for prevalence of stunting and associated factors among children age 6-59 months in Merhabeta woreda north showa and adopted from different literatures (1, 15, 26).

CHAPTER THREE

3. OBJECTIVES

3.1. General objective

To determine the prevalence of stunting and associated factors among children aged 6-59 months at Merhabeta woreda, North Shewa, Ethiopia from February 25 to 20th March 2017.

3.2. Specific objectives

The specific objectives of the study were:-

- To determine the prevalence of stunting among children aged 6-59 months in Merhabeta woreda, North Shewa.
- To identify factors associated with stunting among children aged 6-59 months in Merhabeta woreda, North Shewa.

CHAPTER FOUR

4. METHODOLOGY

4.1. Study Area and period

The study was conducted in Merhabete woreda North Shewa zone. This woreda is 180 Km far from Addis Ababa the capital city of Ethiopia. The woreda is bounded from South by Ensaro, from West by Oromia region, from North by Mida weremo, from East by Menz keya and from South West by Moretina Jiru woreda. The mean annual temperature of the woreda ranges from 16^0C- 270^0C. However, the hottest months of the woreda are from February to May. The woreda has 27 kebeles, with total area of 1,508.19Km^3 hectare and in this area there are 116,024 a total population, of which comprise 61,065 males and 54,959 females and out of those populations 19,271are under five children and there are five health center, one governmental hospital and 24 health post. The livelihood of most of the woreda population is earned from farming and employment in government and non-government organization (46).

4.2. Study Design

A community based cross sectional study was conducted from February 10/2017 to March 10/2017.

4.3. Populations

4.3.1. Source Population: - The source population was all children aged 6 to 59 months who were living with their mother in Merhabeta woreda from February 10/2017 to March 10/2017. .

4.3.2. Study population: - The Study population was all randomly selected children aged 6-59 months who were living with their mothers in selected kebeles of Merhabeta woreda from February 10/2017 to March 10/2017..

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

All children 6-59 month of ages who were lived with their mothers and whose mothers were available in the selected households were included in the study.

4.4.2. Exclusion criteria

Children, who were seriously ill, had physical deformities of limbs and spines were excluding because of difficulty in height measurement. And child's mother critically ill was excluded.

4.5. Sample Size

The sample size was determined using a single population proportion formula assuming that 51.1% was the prevalence of stunting under five children which was done in Amhara region, Lalibela town northern Ethiopia in 2014(13) and taken the highest prevalence from Amhara region to make more representative our sampling). And a 5% margin of error with 95% confidence level with anticipated a 10% non-response rate.

$$n=Z\,(\alpha_{/2})^2 p\,(1-p)/d^2$$

Where $(Z\ \alpha/2)^2$ = level of confidence (1.96)

P = stunting prevalence of 2014 in Lalibela town 51.1 %(12)

d =margin of error 5%

n= $(1.96)^2$ (0.511) (0.489)/ $(0.05)^2$ = 384

The total required sample size was 384 and with adjustment for non-response rate (10%) and the final required sample size was 422 mother child pair.

4.6. Sampling procedures

From the total of 27 kebeles of Merhabeta woreda, 9 kebeles were selected by simple random sampling method. A sample frame of each kebeles (number of under five children in each kebeles) was taken from woreda health bureau. Sample size for each selected kebeles was allocated proportionally. Study participants were selected by using systematic random sampling technique. List of participating households from the selected kebeles was obtained from HEW. After obtaining a list of participant households, interval (K value) was determined for each kebele by dividing the total eligible children in the kebele to the sample proportion. Child mother pairs were selected by labelling each household which had mother child pair in each 9 kebeles and the first household was selected by simple random sampling method. In the household, if there were more than one eligible child in one home one child was selected by lottery method.

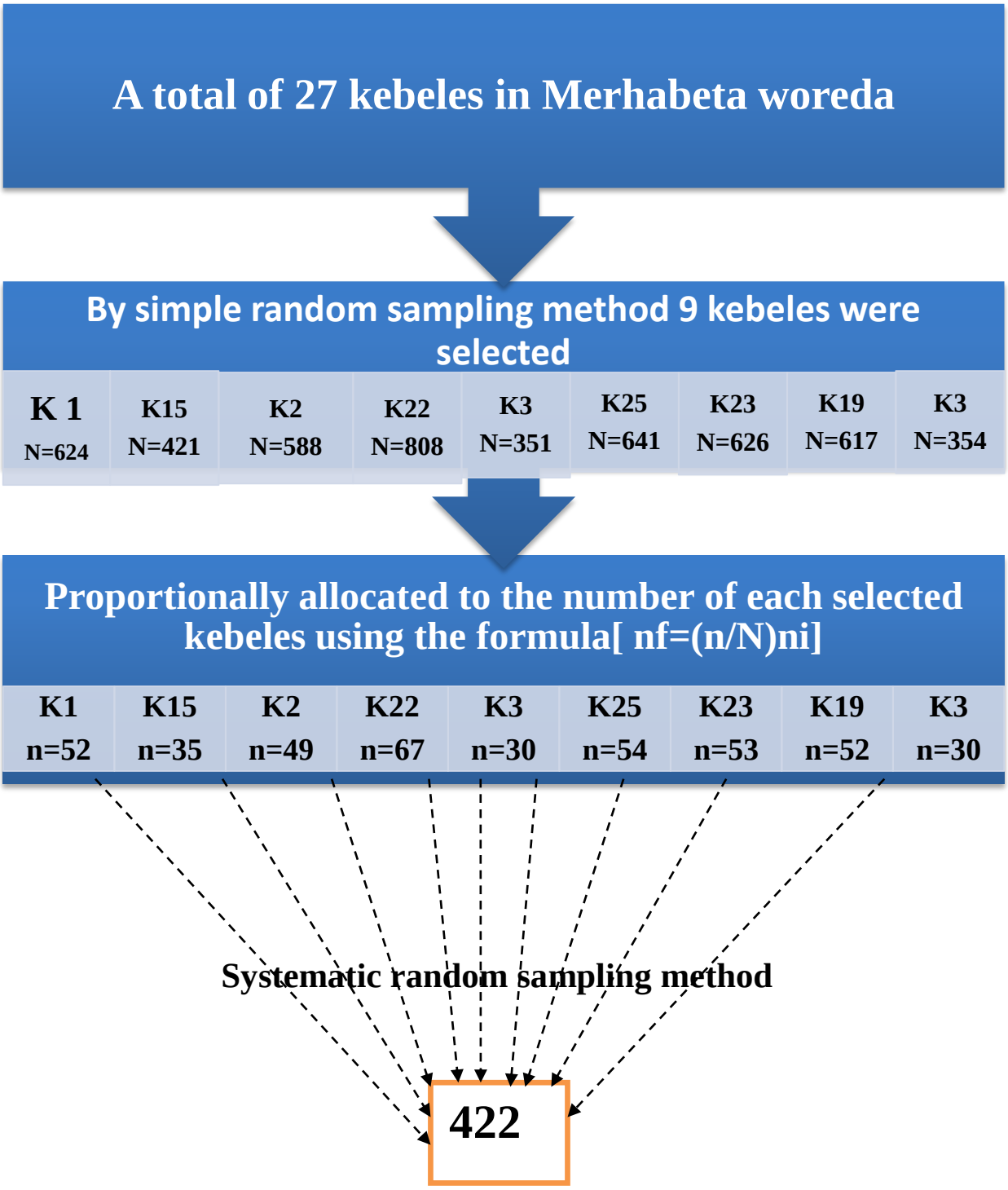


Figure 2: Schematic presentation of sampling procedure for the prevalence of stunting and association factors among 6-59 months children's in Merhabeta woreda.

4.7. Study Variables

4.7.1. Dependent variable

- Stunting (height for age z score)

4.7.1. Independent variables

Socio demographic facto:- Age of child, Sex of Child , marital status of the mother, birth order of the child, Preceding birth interval of child, Mother's Religion, Mother's Ethnicity. Household wealth and educational status

Environmental factors: - Source of drinking water and Latrine facility availability

Dietary factors: - Ever breast feeding, time for initiation of breast feeding, Colostrum feeding, pre-lacteal feeding, duration of breastfeeding, age for introduction of complementary food and method of feeding.

Health care factors: - Childs immunization status, child's diarrhoea, mothers antenatal care visits, mother's age of pregnancy, and mother's place of delivery.

4.8. Operational Definitions/definition of terms

Stunting: - Children who had low height-for-age at < -2 SD of median value of the WHO international growth reference among age 6-59month in Merhabeta woreda.

Diarrhoea: - Diarrhoea was defined for a child having three or more loose or watery stools per day.

Fully Immunized: **-** Children who had receiving a vaccination against tuberculosis (BCG), three doses of the DPT, two doses of Rota vaccine, three doses of PCV, four doses of OPV and a measles vaccination based on EPI protocol by the age of 12 months(47).

Pre-lacteal feeding: - Children had given something other than breast milk during the first three days of life.

Recurrent episodes of diarrhoea: - child who had 2 or more an episode of diarrhoea begins with a 24-hour period with three or more loose or watery stools and an episode of diarrhoea is considered to have ended after 48 hours without three or more loose or watery stools within a 24-hour period.

Not timely initiation of complementary feeding: - children who start complementary feed before and after 6 months.

Duration of breastfeeding: - The number of months of breast feeding among Children

Complementary feeding: - the child receives additional food like solid, semi-solid or soft foods in addition to breast milk.

Currently on vaccination:-children who have receiving a vaccination according to the schedule because of their age.

4.9. Data collection tools and procedure

Eight diploma nurses were collect the data and two BSC nurse was take part in the supervision. Those participants were involved on anthropometric measurement, data collection and supervising the enumerators.

The data collector team were selected based on familiarity with the study area, local language and interest to participate on the study. Selection was done at the presence of community leader and woreda health bureau after briefly communicate the objective of the study with them. They were trained for consecutive two days on the objective, ethics, method and contents of question.

Data was collected by using semi structured questioner which was adopted from UNICEF and reviewing literatures of similar studies based on the objective of this study(5). The tool contains on stunting (chronic malnutrition), demographic, socio-economic, environmental healthcare and dietary factors among children age (6- 59months) in Merhabeta woreda.

Height:- Length measurement for children below 24 months was taken in laying down or recumbent position and standing height was take for children 24-59 months and the measurement was taken to the nearest 0.1 cm using Short's Height Measuring board(5). Study participants were on barefoot while measuring their height.

Age:- The child's age was interviewed from the mother and confirmed by using birth certificate or vaccination cards and also we were used a "local-events" calendar.

4.10. Data quality control

Pre-test was performed in 5% of the sample size in kebele 7 and this kebele was out of from the selected kebeles before data collection from February 28-31/2017 and necessary correction on the tool were performed. The pre-test data was used only for Training of data collectors and to check validity and consistency of the tool. The data collectors were trained on accurate measuring of the child's height. Training was given to data collector and supervisor by principal investigator for 2 day about the objectives of the study, data collection instruments, data collection procedures, physical measurement and the ethical consideration during data collection. The English version questionnaire was translate to local language (Amharic) and again translated back to English to check by experts who are fluent in both languages to check consistency.

The completeness and consistency of questionnaire for each respondent was checked at the time of data collection. Data collection was supervised for correct implementation of procedures by the Investigator. Height scale was calibrated at the nearest 0.1 cm using Height Measuring Board and continuous checkup of measurement was performed for their reliability. The investigator was supervised and reviews every questionnaire for completeness and logical consistency and correction was made at the data collection site. Data entry, coding and cleaning was performed by the principal investigator.

4.11. Data processing and data analysis

The data was checked for completeness and consistencies, and then it was entered using Epi Info version 3.5.1, coded, cleaned and it was exported to SPSS software version 20 for analysis. Nutritional status of the child for height for age z score was computed for each sex bases on the Emergency Nutritional Assessment (ENA) 2007 software for Anthropometric calculator. Descriptive statistics was used to describe the study population in relation to relevant variable. Chi-square and odds ratio (OR) was used to assess the relationship between factors associated with the occurrence of childhood stunting. All variables with association ($p < 0.2$) in the binary logistic regression analysis were interred in the final multivariable regression model to identify independent effect of different factors for childhood stunting. Statistical significance were declared at $P<0.05$. Finally, the result was presented in the form of text, tables and figures.

4.12. Ethical consideration

Ethical clearance was obtain from Institutional Review Board (IRB) of Addis Ababa University, department of Nursing and Midwifery and support letter was issue from Addis Ababa University to Merhabeta woreda Health Bureau and was delivered to the respective responsible body. In addition, informed consent was obtained from study participant (mothers) to confirm their willingness for participation after agreed and understand the objective of the study. Informed oral and written consent was obtained from mother/ care givers prior to participation in the study and data were kept confidential throughout the study. The respondents had the right to refuse or terminate at any point of the interview if they are not satisfied.

CHAPTER FIVE

6. RESULT

6.1 Demographic and socio-economic characteristics

Out of 422 children with their mother, a total of 410 actually participated in the study with response rate of 97.2%. According to this study, 229 (55.9%) were male and out of them167 (73.2%) found in the age group 25-59 months. Among the respondents, 399(97.3%) were Amhara in ethnic group and 404(98.5%) were orthodox religious follower. from the total number of participant, the first birth order were 149(44.1 %,). Concerning the preceding birth interval, 227 (55.4%) were less than 24 months. From the total number of mothers, 373(91.0%) were married, 370 (90.2%) were housewives and 259 (63.2%) of mothers had no formal education. **(Table 1)**

Table 1:- demographics and Socio-economic characteristics of children among 6 to 59 months in Merhabete woreda, Ethiopia, 2017 (n=410)

Variable, N=410	Category	Frequency(N)	Percent (%)
	6 to 24 months	107	26.1
Age of child	25 to 59 months	303	73.9
Sex of child	Male	228	55.9
	Female	182	44.1
Birth order	First child	149	36.4
	2-3	27	6.6
	4-5	26	6.3
	4=>6	208	50.7
Birth interval	1st child	150	36.6
	<24 month	227	55.4
	>24 month	33	8
Age of mother	less than 20	14	3.4
	21 to 35	360	87.8
	greater than 36	36	8.8
Marital status	Married	373	91.0
	Single	3	0.7
	Divorced	23	5.6
	Widowed	11	2.7
Ethnicity	Amhara	399	97.3
	Oromo	11	2.7
Religion	Orthodox	404	98.5
	Protestant	6	1.5
Occupation of mother	Housewife	370	90.2
	Government employee	27	6.6
	NGO	3	0.7
	Merchant	6	1.5
	Self-employee	4	1.0
Educational status of mother	No formal education	259	63.2
	Primary school	116	28.3
	Secondary school	23	5.6
	Above 12	12	2.9
Educational status of father	No formal education	143	34.9
	Primary school	118	28.8
	Secondary school	110	26.8
	Above 12	39	9.5
Family monthly income	<1000 ETB	127	30.9
	1000-2000 ETB	145	35.4

5.2. Health care and environmental characteristics

As it is depicted in Table 2, 211(51.5%) of children had normal birth weight 2.5-4.0 Kg and 15 (3.7%) were >4.0Kg. From the total of 410 children, 133 (32.4%) children were immunized and out of them 188(74%) were found in the age group 25-59 month. Among the children, 166(40.5%) had got diarrhoea during two weeks of period prior to data collection and 168(41%) children were affected by recurrent diarrhoea. More than half of the study participants, 277(67.6%) were not vaccinated with their age.

Majority of the mothers 186(45.4%) had no antenatal care visits, 360 (87.8%) were pregnant within the age group 21-35 years and 14 (3.4%) were pregnant at teenage. Concerning source of drinking water, majority 265(64.6%) of the households used public tap/ stand pipe as a main source of drinking water **(Table 2).**

Table 2: Environmental and health care characteristics of children among 5 to 59 months in Merhabete woreda, Ethiopia, 2017 (n=410)

Variable, N=410	Category	Frequency(N)	Percent (%)
ANC follow up	No	186	45.4
	1 times	82	20
	2-3 times	14	3.4
	4 times	128	31.2
Place of delivery	Health center	40	9.8
	Hospital	330	80.5
	Privet health center	18	4.4
	Home	22	5.3
PNC follow up	Yes	134	32.7
	No	276	67.3
Birth weight	<2.5 Kg	162	39.5
	2.5-4 Kg	211	51.5
	>4 Kg	15	3.7
	Unknown	22	5.4
immunization status	Yes	133	32.4
	No	277	67.6
Category of Vaccination	Fully Vaccinated	93	22.7
	Currently on vaccination	40	9.8
	Not-fully vaccinated	277	67.5
Had recurrent diarrhea in the past 2 weeks	Yes	168	41
	No	242	59
diarrhea within 2wk	Yes	166	40.5
	No	244	59.5
Main source of water	privet tap/stand pipe	138	33.7
	Public tap/stand pipe	265	64.6
	hand pump water	5	1.2
	Protected dwelling	2	.5
Toilet facility availability	Yes	331	80.7
	No	79	19.3

5.3. Dietary characteristics

Breast feeding was almost universal in the study area children who breast fed were 401 (97.8%), three hundred thirty nine (82.7%) children started breast feeding within the first one hour. Children who receive Colostrum were 165 (40.2%) whereas one hundred twenty one (29.5%) child received pre-lacteal feed. Children who breast fed for less than 12 months were 94 (22.9%), 13 -24 months 278 (67.8%) and more than 12 month was 38(9.3%). More than half of children 245(59.8%)) did not received Colostrum.

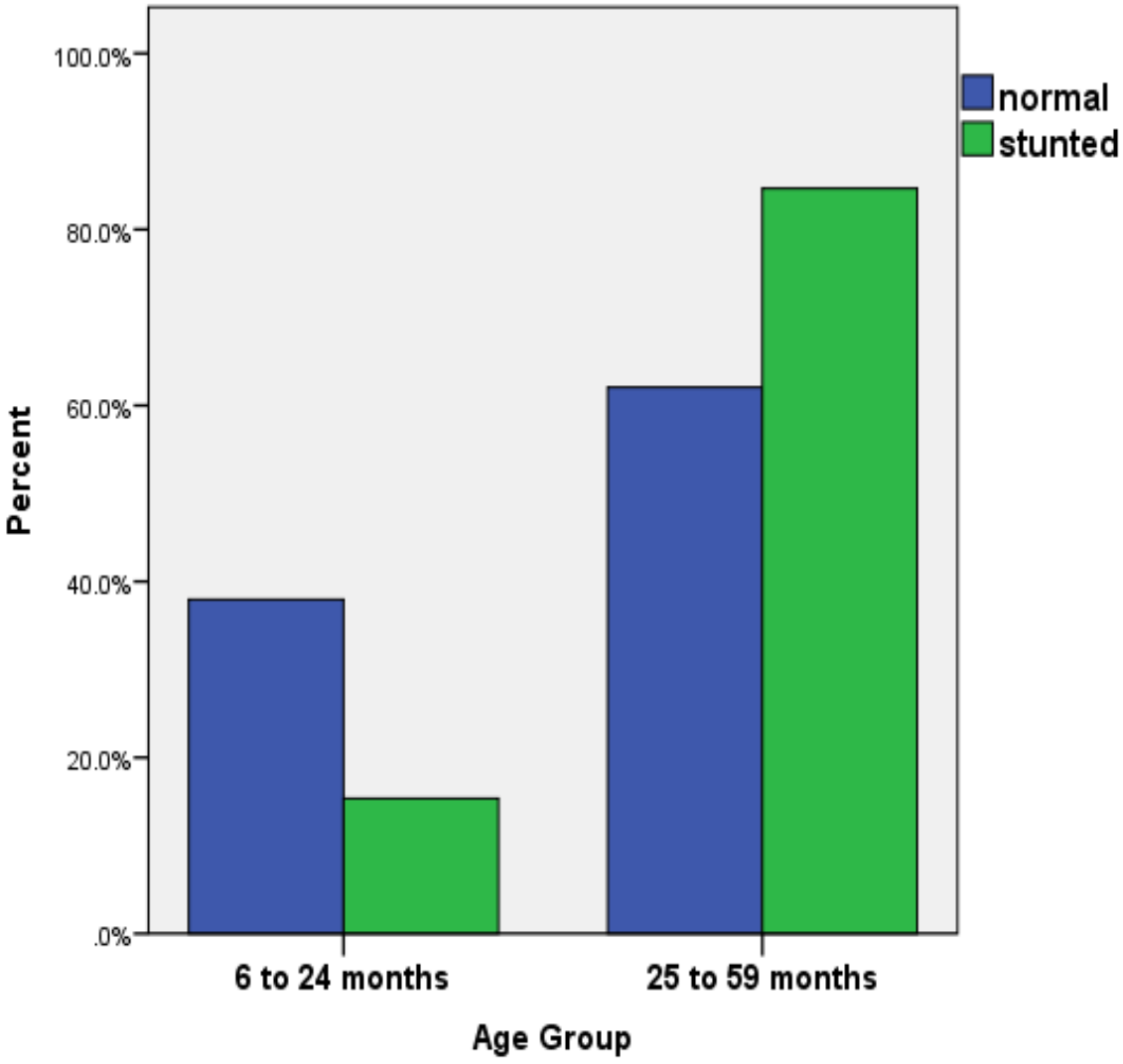
Majority of respondents 233(58.8%) started complementary feeding at the aged of 6 month .Concerning the method of feeding, mother who used cup to feed their children were 208 (50.7%) and 140 (34.1%) used hand to feed their children **(Table 3).**

Table 3: **dietary characteristics of children among 6 to 59 months in Merhabete woreda, Ethiopia, 2017, (n=410)**

Variable, N=410	Category	Frequency(N)	Percent (%)
Ever breast fed child	Yes	401	97.8
	No	9	2.2
Time for initiation of BF	Within 1hr	339	82.7
	Within 24hr	57	13.9
	>24hr	14	3.4
Child fed Colostrum	Yes	165	40.2
	No	245	59.8
Child received pre-lacteal feed	Yes	121	29.5
	No	289	70.5
Age complementary food started	At 6 month	233	56.8
	Not timely initiation of BF	177	43.2
Type of food offer	Bread	14	3.4
	Enjera	257	62.7
	Porridge	118	28.8
	Other	21	5.1
Duration of breast feeding	Less than 12 month	94	22.9
	12 to 24 month	278	67.8
	Greater than 24 month	38	9.3

5.4. Prevalence of stunting among 6-59 months children

The prevalence of stunting among children of 6-59 months in the study area was 215(52.4%) 95% CI: (47.6-57.25). Of this 33(15.4%) were with the age group 6-24 months and 182(84.7%) were with the age group of 25-59 month. From the total of 215(52.4%) stunted children, 74 (18%) were severely stunted and 141 (34.4%) were moderately stunted.



Figur 3:-prevalence of stunting with age among children 6-59 month in merhabete woreda ,Ethiopia,2017.

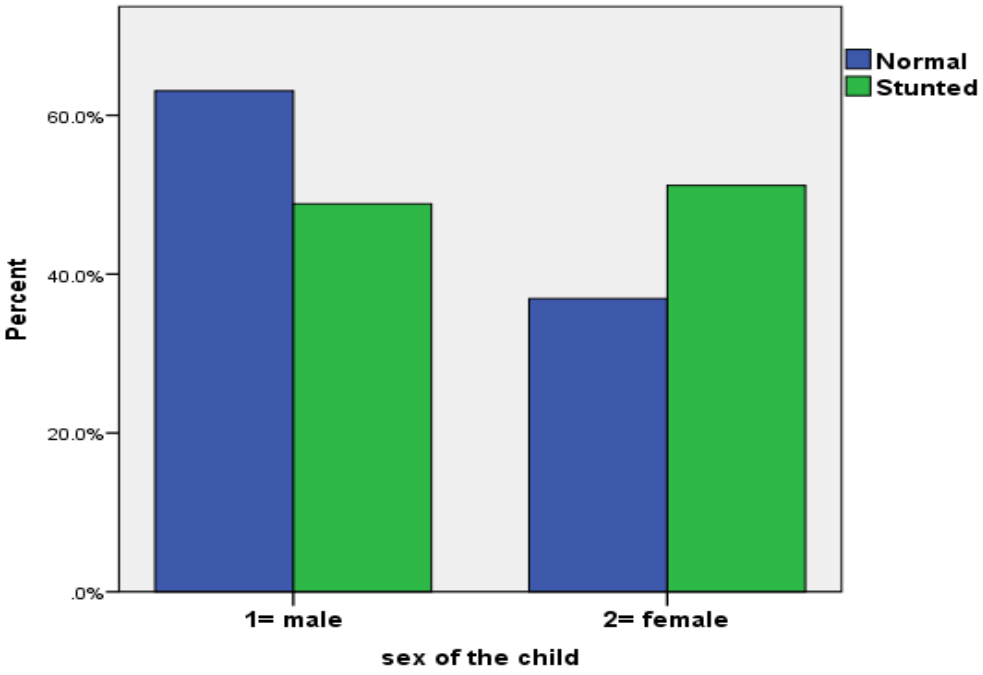


Figure 4:- Prevalence of stunting with sex among children 6-59 months in Merhabete woreda, Ethiopia, 2017

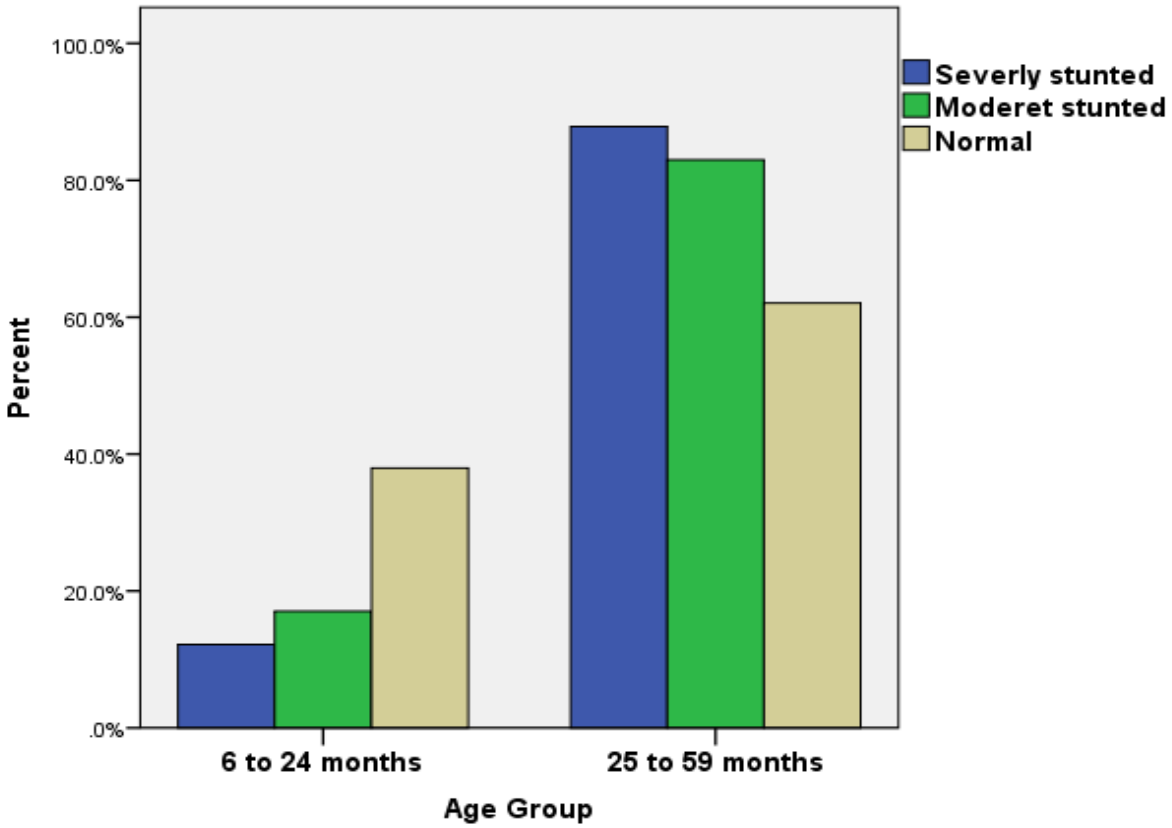


Figure 5: Level of stunting with age groups among children 6-59 months in Merhabete woreda, Ethiopia, 2017.

5.5 Factor associated with stunting among 6-59 months children

In bivariate logistic regression analysis, factors which were significantly associated with stunting were sex of child, ANC visits of mother, preceding birth interval, immunization status of the child, Colostrum feed, age of complementary food started, method of feeding, birth weight, and educational status of the mother, Post natal care and duration of breast feeding. Variables that had significant association in bivariate analysis were inserted into multivariable logistic regression model. In multivariable logistic regression analysis factors that were significantly associated with stunting were sex of child, age of the child, educational status of the mother, ANC visits of mother, age of complementary food started and birth weight were identified as factors associated with stunting among children age 6-59 month in the study area.

Children within age group 25-59 months were 4 times more likely to be stunted when compared to children with age group 6-24 months (AOR (95%CL) 4 (1.88-8.42)) and children whose mothers attended higher education had reduced risk of being stunted by 90% compared to mother who cannot read and write(AOR (95%CL) 0.01(0.01-0.06)).

In this study female children were 2.8 times more likely to be stunted than male (AOR (95%CI) 2.8(1.50-5.10)). Children who didn't have timely initiation of complementary feeding practice were 2.4 times more likely to be stunted than children who started at 6 month. (AOR (95%CI) 2.4(1.27-4.61)) (Table 4)

Table 4:- **Bivariate and multivariable logistic regression analysis of factors associated with stunting among children 6-59 months in Merhabete woreda, Ethiopia 2017 (n=410)**

Variable	Stunted	Non stunted	COR (95% CI)	AOR (95% CI)	P-Value
Sex					
Male	105(48.8%)	123(63.1%)	1	1	
Female	110(51.2%)	72(36.9%)	1.79(1.20-2.657)	**2.8(1.503-5.099**)	**0.001**
Birth order					
First child	54(25.1%)	95(48.7%)	1	1	
2-3	15(7%)	12(6.2)	2.2(0.960-5.040)	0.5(0.205-1.082)	0.076
4-5	15(7%)	11(5.6	2.4(1.029-5.594)	3.1(0.987-9.923)	0.053
>6	131(60.9%)	77(39.5 %)	3(1.993-4.632)	1(0.313-3.480)	0.945
Birth interval					
First child	70(32.6%)	80(41 %)	1.5(0.703-3.335)	1.7(0.454-6.377)	0.431
<24month	133(61.9%)	94(48.2%)	2.5(1.162-5.278)	1(0.298-3.170)	0.963
>24 month	12(9.8%)	21(10%)	1	1	
Education of mother					
No formal	164(76.3%)	95(48.7%)	1	1	
Primary	46(21.4%)	70(35.9%)	0.4(0.243-0.597)	**0.2(0.105-0.425)**	**0.001**
Secondary	4(19.1%)	19(9.7%)	0.1(0.04-0.369)	**0.1(0.028-0.446)**	**0.002**
Above 12	1(15.8%)	11(0.5%)	0.05(0.007-0.414)	**0.01(0.001-0.063)**	**0.007**
ANC					
No	132(61.4%)	54(27.7%)	6.5(3.934-10.723)	**3.2(1.405-7.100)**	**0.005**
1times	44(20.5%)	38(19.5%)	3.1(1.718-5.510)	2.4(1.002-5.749)	0.05
2-3times	4(1.9%)	10(5.1%)	1.1(0.313-0.3.611	1.2(0.247-5.392)	0.855
>4times	35(16.3%)	93(477%)	1	1	
PNC					
Yes	48(22.3%)	86(44.1%)	1	1	
No	167(77.7%)	109(55.9%)	2.7 (1.79-4.21)	0.6(0.027-11.93)	0.718
Birth Wight					
<2.5	163(75.7%)	48(24.6%)	4(1.659-10.011)	**5(1.450-17.309)**	**0.011**
2.5-4	48(22.4%)	136(69.8%)	0.4(0.147-0.918)	0.4(0.119-1.466)	0.173
>4	4(1.9%)	11(5.6%)	1	1	
Immunization					
Yes	47(21.9%)	85(43.6%)	1	1	
No	168(78.1%)	110(56.4%)	2.8(1.84-4.33)	1.7(0.080-20.377)	0.739
Recurrent episode of diarrhea					
Yes	112(52.1%)	56(28.7%)	2.7(1.792-4.066)	1.7(0.713-4.187)	0.226
No	103(47.9%)	139(71.3%)	1	1	
Diarrhea					
Yes	110(51.2%)	56(28.7%)	2.6(1.726-3.917)	1.1(0.453-2.607)	0.852
No	105(48.8%)	139(71.3%)	1	1	
Colostrum feed					
yes	65(30.2 %)	10051.3)	1	**1**	
no	150(69.8%)	95(48.7%)	2.4(1.621-3.640)	0.8(0.410-1.466)	0.434
Method of feeding					

Spoon	22(10.2%)	19(9.7%)	1.5(.535-4.456)	0.4(0.062-2.130)	0.262
Cup	99(46%)	109(55.9%)	0.6(0.489-0.997)	0.5(0.103-2.117)	0.323
Hand	85(39.5%)	55(28.2%)	2.0(0.814-5.214)	0.6(0.130-2.940)	0.547
Bottle	9(4.2%0	12(6.2%)	1	1	
Age of child					
6 to24 month	33(15.3%)	74(37.9%)	1	**1**	
25to59month	182(84.7%)	121(962.1%)	3.4(2.107-5.398)	**4(1.881-8.424)**	**0.0001**
Duration of BF					
< 12 month	36(16.7%)	58(29.7(%)	0.5(0.234-0.977)	1.1(0.340-3.679)	0.854
12 to24 month	158(73.5%)	120(61.5%)	1.1(0.539-2.108)	1.4(0.510-3.879)	0.511
>24 month	21(9.8%)	17(8.7%)	1	1	
complementary food started					
At 6 month	81(37.7%)	152(77.9%)	1	1	
Before and after 6 month	134(62.3%)	43(22.1%)	5.6(3.779-9.050)	**2.4(1.266-4.606)**	**0.0001**

CHAPTER SIX

6. Discussion

This study was tried to assess the prevalence of stunting and associated factors among children 6-59 months. Based on the findings, the prevalence of stunting in the study area was 52.4%. The finding was almost comparable with studies conducted in Amhara region (Lalibela town) 51.1%(13)Sidama zone 50.3%(16) and Oromia Regional State 47.6%(32). The prevalence of stunting was relatively higher in comparison with the latest EDHS 2016, (38% were stunted)(11) Southern rejoin of Hawasa 26.6%(1) and in Bure Town North West Ethiopia 24.9 (9). This variation might be due to the difference in agro-ecological factor, economical difference of each study area, availability of technology for farming, types of agricultural product and also due to the national prevalence may indicate the rural and urban average prevalence of stunting.

However, the prevalence of stunting in the study area was lower than study conducted in South East Amhara region 60.6 %(12) and also lower than in other country like Brazil 62 %(20) and in India 59.3%(18). This difference might be due to population migration from rural to urban in order to get better job and living condition, decreased purchasing power of the community, increment of food prices, inappropriate infant and young child feeding practices and child health care.

Sex of the child was one of the factors significantly associated with stunting in the study area. Female children were 2.8 times more likely to be stunted than male (AOR (95%CI) 2.8 (1.50-5.10)). This was congruent with previous study which was conducted in Somalia rural area, females were 1.5 times more likely to be stunted than male (AOR (95% CI) 2.8(1.47-1.02)(34) and in other country study like Pakistan the male-female ratio was 1:11 (19). This variation might be due to unmeasured factors on care-giving behaviours by the sex preference of mothers. In developing country like Ethiopia parents were stricter with their daughter than their sons and often parents give more meal freedom to male children than females(34).

Child's age was one of the factors significantly associated with stunting in the study area. Comparing with children aged 6-24 months, children within age group 24-59 months were 4 times more like to be stunted (AOR (95%CI) 4(1.88-8.42)). In the same way study conducted in Hawasa town, children who were aged above 24 months were 4 times more likely to be stunted than below 24 months (AOR (95%CI) 3.79(1.30-12.11))(1). This might be due to the

fact that at this age category, children whose age increase, physiological demand or food conception increase as a result those children if not well feed based on their age, growth become to suppressed.

This study had also shown that, children whose mothers attended higher education had reduced risk of being stunted by 90% compared to mother who cannot read and write (AOR (95%CL) 0.01(0.01-0.06)). This finding was consistent to the study which was conducted in Sidama Zone. According to the study which was conducted in Sidama Zone Ethiopia, maternal education was strongly associated with childhood stunting, children from primary school completed mother were at risk of being stunted than higher education (AOR (95% CI) 2.29(1.15-4.54))(16). The finding was also in line with the study which was conducted in Brazil (20) and Zambia (26) shows significant association of maternal education with stunting. This might be due to the fact that educated women are more likely to be aware of nutrition, hygiene, and health care which can greatly improve the nutritional status of their children.

According to this study, small birth weight children were 5 times more likely to be stunted than 4kg and above (AOR (95%CI) 5 (1.45-17.31)). Similar findings were obtained in East Welega zone. The study conducted in Welega showed that children who had low birth weight were 1.9 times more likely to be stunted than normal birth weight or perceived as average (41).This finding was also in line with study conducted in Nepal(37) and Sri Lanka(39) showed that direct relationship between prevalence of stunting and birth weight. This could be related with mother's health and nutritional status before and during pregnancy in which determined size of the child during intra-uterine period and also those small sized children were frequently exposed to an infection which leads to mal absorption of nutrients in their body.

This study found that, children whose mothers hadn't attended antenatal clinic were 3.2 times more likely to be stunted than mothers had 4 and above ANC visit (AOR (95% CI) 3.2(1.41-7.10)). The finding is supported by study conducted in South East Amhara Region. Mothers who hadn't antenatal care visit were 2 times more likely to be stunted than who had two to three ANC visit (AOR (95% CI) 2(1.12-3.03))(12). In Zambia Children whose mothers had attend antenatal clinics four or more had reduced stunted by 0.6 compared to those whose mothers dose not attend antenatal care (AOR (95%CI) 0.562(0.29-1.07)) (28). This could be due to nutritional intervention and maternal advice during pregnancy had a great impact on child growth and multiple cause of stunting, including privation and control of prenatal

infection and subclinical condition that restrict growth for children and stimulation of early child development.

Age of complimentary food started was another variable which was associated with stunting. Children who didn't have timely initiation of complementary feeding practice were 2.4 times more likely to be stunted than children who started complementary feeding at 6 month (AOR (95%CI) 2.4(1.27-4.61)). Similar findings were obtained in West Gojam(10); Khartoum(45) and Belgaum(44).This could be explained by the fact that breast-feeding is the natural and perfect form of infant feeding for meeting a child's nutritional needs during the first six months of child life. This in turn implies that as the duration of exclusive breast feeding extends from the recommended duration, then the risk of chronic malnutrition increases because of low intake of supplementary food that is rich in energy.

7. Limitation of the Study

This study was based on the reported answer; there may be recall bias in reporting feeding practice and health care issues in spite of asking short duration history. The study design was not comparative.

The cross-sectional design employed did not allow establishing causal-effect relationship of independent and dependent variables.

8. Conclusion

Depending on the facts of the study, it can be concluded that; child stunting or chronic mal nutrition problem is highly observed in Merhabete woreda, 52.4%. There was significant relation seen between age of child, birth weight, sex of child, age of complimentary feeding and antenatal care with stunting. Maternal educational status, child birth weight and age of started complementary feeding were strongly associated with stunting. Therefore, it implies that measures targeted at reducing child stunting should not be taken in isolation but should include a multifaceted approaching looking at both the mother and the children aged 6–59 months at all societal levels in the study area.

9. Recommendations

Based on the findings of the study, the following recommendations are forwarded:

For Merhabete woreda Health office

- ☞ Need to plan nutrition interventions to effectively address the nutritional conditions with participation of stakeholders and community at large.
- ☞ Need to increase awareness about antenatal care visit especially its importance for optimal growth and development of children before delivery.
- ☞ Need to create awareness and resource mobilization for health care providers towards ANC follow up, educating mothers and exclusive breast feeding.

Health care providers

- ☞ Health care providers are called upon to create awareness on the importance of a nutritious diet in children less than five years of age with mothers and implement the strategy of woreda
- ☞ Need to strengthen participatory nutrition education to create awareness and to develop behaviour change communication for better feeding and caring practices among the community.

For the community

- ☞ Give equal attention for both male and female while feeding the child.
- ☞ Exclusive breast feeding up to six months and at six months of age needs integration with appropriate complementary feeding.

- ☞ Strict antenatal care follows up and implements advices which are provided from health care providers.

For researchers

- ☞ Need to conduct further studies with large sample size to accommodate for great variability and with different study design.

10. References

1. Beruk Berhanu Desalegn1* EK, Kidist Fikre1, Tafese Bosha1. Stunting and Its Associated Factors in Under Five Years Old Children: The Case of Hawassa University Technology Villages, Southern Ethiopia. 2016;10(11):25-31.

2. Misgan Legesse Liben1* TA, Yohannes Haile2. Determinants of Child Malnutrition among Agro Pastorals in Northeastern Ethiopia: A Cross-Sectional Study. 2016;10.

3. Mr. Habtamu Tesfaye FMoH, Mr. Theodros Getachew EPHI, Mr. Atkure Defar EPHI, Mr. Akalework Bezu CSA, Mr. Assefa Negera CSA, Mr. Million Taye CSA, et al. Ethiopia Mini Demographic and Health Survey. 2014.

4. Weise AS. Stunting Policy Brief. 2014;40(40).

5. (BSC) EA. PREVALENCE OF STUNTING AND ASSOCIATED FACTORS AMONG CHILDREN AGE 6-59 MONTHS AT MIZAN-AMAN TOWN, BENCH MAJI ZONE, SNNPR REGION, ETHIOPIA, 2015. 2015.

6. Tsgehana Gebregyorgis TT, 2 and Azeb Atenafu1. Prevalence of Thinness and Stunting and Associated Factors among Adolescent School Girls in Adwa Town, North Ethiopia. 2016.

7. Firehiwot Mesfin1 Yemane Berhane2 Alemayehu Worku2. Prevalence and associated factors of stunting among primary school children in Eastern Ethiopia. 2015.

8. *Yadav DK1, Gupta N1, Shrestha N3. AN ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN LESS THAN 3 YEARS IN RURAL AREAS OF MAHOTTARI DISTRICT OF NEPAL. 3. 2014;3:597-603.

9. Martin Casapı´a1 SAJ, Carmen Nu´n˜ez1, Elham Rahme2,3 and Theresa W. Gyorkos2,. Parasite and maternal risk factors for malnutrition in preschool-age children in Belen, Peru using the new WHO Child Growth Standards. 2007.

10. Desalegne Amare AN, 2 Baye Tsegaye,3, Birtukan Assefa aBA. Prevalence of Undernutrition and Its Associated Factors among Children below Five Years of Age in Bure Town, West Gojjam Zone, Amhara National Regional State, Northwest Ethiopia. 2016:8.

11. Agency CS. Demographic and Health Survey. 2016.

12. Behailu Tariku1 AM, Mache Tsadik2, Girma Azene3. Prevalence and Risk Factors of ChildMalnutrition in Community BasedNutrition Program Implementing and Nonimplementing Districts from South East Amhara, Ethiopia. 2014.

13. Yalew* BM. Prevalence of Malnutrition and Associated Factors among Children Age 6-59 Months at Lalibela Town Administration, North WolloZone, Anrs, Northern Ethiopia. 2014.

14. Halala2 DDGEPaY. Prevalence of stunting and associated factors among children aged 6 to 59 months in Areka town, Wolaita Zone, Southern Ethiopia. Journal of Medicine, Physiology and Biophysics. 2016;Vol.21.

15. Griffiths SGDSDHNFJK. FACTORS ASSOCIATED WITH STUNTING IN ETHIOPIAN CHILDREN UNDER FIVE. 2013.

16. Gutema5 YTW---TB---DH---TT---H. PREVALENCE OF STUNTING AND ASSOCIATED FACTORS AMONG UNDER FIVE CHILDREN IN WONDO GENET WOREDA, SIDAMA ZONE, SOUTHERN ETHIOPIA. 2015.

17. Amany Edward Seedhom MD* ESMM, Eman Mohamed Mahfouz MD. Determinants of stunting among preschool children, Minia, Egypt. 2014;2.

18. Sheila C. Vir1 TA, Arvind Pandey2, A.K. Nigam3 and Richa Malik1. Child Undernutrition in India: Age-wise Trend and Risk Factors. 2015;Volume 13:pp.85-93.

19. Muhammad Umair Mushtaq1, Sibgha Gull1, Usman Khurshid1, Ubeera Shahid1, Mushtaq Ahmad Shad2 and Arif Mahmood Siddiqui1. Prevalence and socio-demographic correlates of stunting and thinness among Pakistani primary school children. 2011.

20. J. Thamilini* KDRRSaJMUKJ. Prevalence of Stunting among Pre-school Children in Food Insecure Rural Households in Sri Lanka. 2015;26.

21. Hendrayati*. Analysis of Determinant Factors in Stunting Children Aged 12 to 60 Months. 2015.

22. Anwar Islam 1, Tuhin Biswas 2. Chronic stunting among under-5 children in Bangladesh: A situation analysis. 2015.

23. * KSI. Katsushi S. Imai 2013.

24. NAPAD. GLOBAL NUTRITION REPORT 2015 AFRICA BRIEF. 2015.

25. Indrapal Ishwarji Meshram MD NAM, Nagalla Balakrishna PhD, Kodavanti Mallikharjuna Rao PhD, Avula Laxmaiah MBBS, MPH, Ginnela Nag Veera Brahmam DPH. Trends in the prevalence of undernutrition, nutrient & food intake and predictors of undernutrition among under five year tribal children in India. 2012.

26. Kodzi ØKI. Children's stunting in sub-Saharan Africa. 2011;25:565-94.

27. 1John G. Safari ZSMaJEL. Prevalence and Factors Associated with Child Malnutrition in Nzega District, Rural Tanzania. 7(3): 94-100. 2015(ISSN: 2041-3238,).

28. Bupe B. Bwalya1 ML, Christopher C. Mapoma2 and Namuunda Mutombo3. Factors Associated with Stunting among Children Aged 6-23 Months in Zambian: Evidence from the 2007 Zambia Demographic and Health Survey. 2015;2(1).

29. BADAKE, IM, M.A. MBOGANIE2, G. MUCHEMI2, E.M. KIHORO3, E. CHELIMO4. NUTRITIONAL STATUS OF CHILDREN UNDER FIVE YEARS AND ASSOCIATED FACTORS IN MBEERE SOUTH DISTRICT, KENYA. 2014;22:799 - 806.

30. Andy Emmanuel1 NOJ, Oyedele E. Adetunji1, Gotodok K. Hosea1, Kumzhi R. Partience1. Malnutrition and Associated Factors among underfive in a Nigeria Local Government Area. 2016;3(6).

31. Beka Teshome1 WK-M, Zewditu Getahun1, Girum Taye1. Magnitude and determinants of stunting in children underfive years of age in food surplus region of Ethiopia: The case of West Gojam Zone. 2009;23.

32. Kebede Mengistu* KAaBD. Prevalence of Malnutrition and Associated Factors Among Children Aged 6-59 Months at Hidabu Abote District, North Shewa, Oromia Regional State. 2013(2161-0509).

33. Clariana V. Ramos∗ SCD, Juraci A. César. Prevalence and factors associated with stunting andexcess weight in children aged 0-5 years from the Brazilian semi-arid region. 2014.

34. Sisay Shine* FT, Zemenu Shiferaw, Lema Mideksa and Wubarege Seifu. Prevalence and Associated Factors of Stunting among 6-59 Months Children in Pastoral Community of Korahay Zone, Somali Regional State, Ethiopia 2016. 2016.

35. Nanayakkara DRJDMHL. ASSESSMENT OF NUTRITIONAL STATUSAND ASSOCIATED FACTORS IN NORTHERN PROVINCE. 2012.

36. Marušić PA. journal ofglob heaaltl. 2015;1(ISSN 2047-2978).

37. Teresa Shamah-Levy1 LCN, Hortensia Moreno-Macias2, Eric Monterrubio-Flores1 and Marco Antonio Avila-Arcos1. Maternal Characteristics Determine Stunting in Children of Less than Five Years of Age Results from a National Probabilistic Survey. 2008.

38. Paudel R PB, Wagle RR, Pahari DP, Onta SR. Risk Factors for Stunting Among Children: A Community Based Case Control Study in Nepal. 2012;10(39).

39. SM MK. Socio-economic Determinants of Severe and Moderate Stunting among Under-Five Children of Rural Bangladesh. 2011.

40. Wijesinghe1 TDRPaDGNG. Nutritional Status of under 5 Year-Old Children and its Relationship with Maternal Nutrition Knowledge in Weeraketiya DS division of Sri Lanka. Tropical Agricultural Research 2010;Vol. 21(4):: 330 - 9.

41. Alemu Adeba1 SG, Habtamu Fekadu Gemede2*, Wondu Garoma. Prevalence of Stunting and Associated Factors of Children among 6-59 Months Age in Guto Gida District, East Wollega Zone, Oromia, Ethiopia. 2014;Vol.29.

42. Justine Kavle VF, Ali Abdelmegeid, Farouk Salah, Seham Hafez, Magda Ramzy, Doaa Hamed, Gulsen Saleh, and Rae Galloway. Factors Associated with Growth in the First Year of Life in Egyptian Children: Implications for the Double Burden of Malnutrition. 2015.
43. 1Dilaram Acharya SG, 2Hari Prasad Kaphle, 3Nirmala Naupane. Factors Associated with Nutritional Status of Under Five Children in Rupandehi District of Nepal. 2013(3):56-9.
44. Rakesh K Nayak1 PRW, Mallapur M D3. Determinants of Nutritional Status of Under - Five Children - A Cross Sectional Study. 2014;2(2):16.
45. Ali Mohieldin Mahgoub Ibrahim (M.Sc.) 1 DMAHAM. The impact of feeding practices on prevalence of under nutrition among 6-59 months aged children in Khartoum. 2010;5.

13. Annex

Annex-I

13.1 English version Information sheet and consent form

My study focuses on assessing magnitude of stunting and associated factors among 6-59 months children in Merhabeta woreda north Shewa zone, Ethiopia.

Hello, my name is _____ I am post graduate student in Addis Ababa University College of Medicine and Health sciences. This questionnaire is prepared to conduct a study the magnitude of stunting and associated factors among aged 6-59 months population to complete the questionnaire designed by the researcher because you fulfil requirement for sampling. The finding of this study will help provide timely and proper nutritional and health care services to yours and other children's. Thus this interview is prepared for this purpose to get appropriate data on the study we are conducting. The data that I will obtain using this interview will be used only for research purpose and your response is kept confidential. For this purpose your name will not be written here and there is no way of linking our individual responses to the final result of the study findings. The study has no risk to you and your child except sparing a maximum of 30 minutes of your time. You have the right not to respond at all or to withdraw in the meantime, but your participation is highly valuable for the success of our research objectives. Therefore, I politely request your cooperation to participate in this interview.

Do you agree to participate in this study? Yes, _____ continue No_____ thank you

13.2 English Questionnaires

Name of the data collector_____ signature_____ Data_____

Questionnaire code_____

S.No	Questions	Response and coding category	Skip
1	**Demographic and socio economic factors**		
	Characteristics of the child		
101	How many months old is your child?	…….(months)	
102	What is the sex of your child?	1. Male 2. Female	
103	What is the birth order your child?	1. 1 2. 2-3 3. 4-5 4. 6+	
104	How many months does your child have between the preceding birth intervals?	1. First birth 2. <24 months 3. ≥24 months	

S.No	Questions	Response and coding category	Skip
2	**Characteristics of the parent and household**		
201	How old are you when you were pregnant this child?	……..(yrs)	
202	What is your marital status?	1. Married 2. Divorced 3. Widowed 4. Never married	
203	What is your ethnicity	1. Amhara 2. Oromo 3.Tigre 4. Other specifies	
204	What is your religion?	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Others (specify) ……	
205	What is your main occupation?	1. House wife 2. Government employee 3. Non-government employee 4. Merchant 5. Self employee 6. Others (specify) ……	

206	What is your educational	1. No education 2. Primary education (1-8) 3. Secondary (9-12) 4. Above secondary	
207	What is your husband's educational level?	1. No education 2. Primary education (1-8) 3. Secondary (9-12) 4. Above secondary	
208	How much is your monthly income in birr?	…….. birr	

S.No	Questions	Response and coding category	Skip
3	**Environmental factors**		
301	What is the main source of drinking water for members of your household?	1. Piped into dwelling 2. Piped to yard/plot 3. Public tap/stand pipe 4. *bottled water* know 5. Protected well 6. Unprotected well 7. Other (Specify)……..	
302	Do you have functional toilet facility in your house? (if possible observe it)	1. Yes 2. No	

S.No	Questions	Response and coding category	Skip
4	**Health care factors**		
401	How many times you visited Antenatal care in health institution when you are pregnant of this child?	1. none 2. 1 3. 2-3 4. 4+	
402	Where did you deliver your child?	1. Public health facility 2. Private health facility 3. Home	
403	Did you attend post natal care service after delivery of your child?	1. Yes 2. No	
404	How much was your child's weight or size at birth?	1. Smaller than average (<2.5kg) 2. Average (2.5 -4 kg) 3. Large (>4kg)	
405	Did your child received vaccination?	1. Yes 2. No	
406	If yes did your child took all vaccination? If card available check	1. Fully Vaccinated 2. Currently on vaccination 3. Not-fully vaccinated	
407	Did your child have been ill with diarrhea in the last two weeks	1. Yes 2. No	
408	Did you child have recurrent episodes of diarrhea (2times and more) in the past two weeks?	1. Yes 2. No	

S.No	Questions	Response and coding category	Skip
5	**Dietary factors**		
501	Have you ever breast fed your child?	1. Yes 2. No	If no skip to 506
502	When did you start breast feeding after delivery?	1. ≤1 hour of birth 2. Within the first 24 hours 3. >24 hours	
503	Did your child receive the first milk (colostrums)?	1. Yes 2. No	
504	Did your child receive any food or liquids other than breast milk during the first three days of life?	1. Yes 2. No	
505	For how long the child breast fed?	…….. (months)	
506	When did you start giving complementary foods to your child?	…….. (months)	
507	What type of food did you give for your child?	1.bread 2.enjera 3.poreje 4.other	
5078	What method did use for feeding your child?	1. Spoon 2. Cup 3. Hand 4. bottle	More than one answer is possible

R.NO	Anthropometric measurement	Measurement in cm	Remark
6	Length or height measurement		
601	Length or height	……..(cm)	

Annex-II

13.3 Amharic Version Information sheet and Consent form

ይህ የጥናት መጠይቅ የሚያተኩረው በሰሜን ሸዋ መርሀቤቴ ወረዳ ውስጥ ሰድሚያቸው ከ6-59 ወራት በሆኑ ህጻናት ላይ ቁመታቸው ከሰድሚያቸው ጋር ሲነጻጸር ዝቅተኛ መጠን ያላቸውን ህጻናትን እና ተንጻኝ ምክንያቶችን ለመለየት የተዘጋጀ ነው፡ ፡

ጤና ይስጥልኝ ስሜ.....የተባልኩኝ እኔ በአዲስ አበባ ዩኒቨርሲቲ የህክምና ጤና ሳይንስ ኮሌጅ የሁለተኛ ድግሪ ተማሪ ነኝ፡ ፡ ከላይ እንደጠቀስኩት ይህ ጥናት መጠይቅ የሚያተኩረው በመርሀቤቴ ወረዳ፤ ሰድሚያቸው ከ6-59 ወራት በሆኑ ህጻናት ላይ ቁመታቸው ከሰድሚያቸው ጋር ሲነጻጸር ዝቅተኛ መጠን እና ተንጻኝ ምክንያቶችን ለመለየት የተዘጋጀ ሲሆን እርስዎ ለጥናቱ የሚያስፈልጉ መስፈርቶችን ስሟሉ በመገኘትዎ የጥናቱ አካል ለድርገንዎታል ፤ ስለሆነም የጥናቱ ግኝት ስርስዎ እና ለልሎችም ልጆች ወቅታዊ የስነ-ምግብ እና የጤና እንክብካቤ እንዲያገኙ ይረዳል፡ ፡ በመሆኑም ይህ መጠይቅ ሲዘጋጅ ተገቢ የሆኑ መረጃዎችን ለማግኘት ሲሆን ከእርስዎ የሚገኙ መረጃም ለጥናት እና ምርምር ተግባር ብቻ የሚውል ነው፡ ፡ ከእርስዎ የሚሰጡት ምላሾች ሚስጥራዊነታቸዉ የተጠበቀ እንደሚሆን እየገለጽኩኝ ለዚህም ለላማሲላል የእርስዎምሆነ የልጅዎ ስም በመጠይቁ ላይ የሚጻፍ እና የጥናቱ የመጨረሻ ውጤት ከየእርስዎምሆነ የልጅዎ የግል ማንነት ጋር የሚደገናኝ መሆኑን ከወዲሁ ለረጋግጣለሁ፡ ፡

በተጨማሪ ምይህ መጠይቅ ከ30 ደቂቃ ያልበለጠ ጊዜ ከመሻማት ያለፈ በእርስዎምሆነ በልጅዎ ላይ ምንም አይነት ጉዳት የሚያደርስ ሲሆን ከጥናቱ ጋር በተያያዘ ለሚከሰቱ ማንኛውም ዓይነት ጉዳዮች ከዚህ በታች በተቀመጠው አድራሻ ሲያገኙን የሚችሉ መሆኑን እያስገነዘብኩ በጥናት ላይ ያለመሳተፍ እና የሚቋረጥ መብትዎ የተጠበቀ ነው፡ ፡ የእርስዎ መሳተፍ ግን ከምንም በላይ ለጥናቱ ዓላማ መሳካት ጠቃሚ በመሆኑ በመጠይቁ እንዲተባበሩኝ ለል በታላቅ አክብሮት እና ትህትና እጠይቃለሁ፡ ፡

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት? አዎ---- ----------አይደለም---------- አመሰግናለሁ!!!

ሽፈራው አብጠዩ፡ - 0931614769

Email:- shifeby@gmail.com

13.4 Amharic questioner

መጠይቁን የሚሰበስበው ሰው ስም---------- ፊርማ---------- ቀን
የመጠይቁ ኮድ---------- የተጠያቂ ኮድ ----------የቤት .ቁጥር ----------

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	እስፍ
1.	ማህበራዊ፣ ኢኮኖሚያዊ እና ስነ-ህዝባዊ መረጃን በተመለከተ		
1.1.	ልጅን በተመለከተ		
101	የልጅዎ እድሜስንት ነው?	---------- ወር	
102	የልጅዎ ፃታ?	1. ወንድ 2. ሴት	
103	ይህ ልጅ ስንተኛ ልጅዎ ነው/ናት?	1. የመጀመሪያ 2. ከ 2-3ኛ 3. ከ 4-5ኛ 4. 6 እና ከዚያ በላይ	
104	የስሁኑ ልጅዎ ከታላቁ/ቋ ምን ያህል የሰንበተ ልዩነት አላቸው?	1. ከ 24 ወራት በታች 2. 24 ወራት እና ከዚያን በላይ	

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	እስፍ
2	ወላጆችን እና ቤተሰብን በተመለከተ		
201	ይህን ልጅዎን ነፍሰጡር የነበረ ጊዜ ሰድሚዎ ስንት ነበር?	----------ዓመት	
202	የጋብቻ ሁኔታ?	1. ያገቡ 2. የተፋቱ 3. ባላቸውን በሞት ያጡ 4. ያላገቡ	
203	ብዔሮዎ ምን ድን ነው	1. ስሚራ 2. ቤንች 3. ኦሮሞ	

		4. ከፋ 5. ጉራጌ 6. ስልቴ 7. ሌላ ካለ ይጥቀሱ----------	
204	ዘይማኖትዎ ምንድን ነው?	1. ኦርቶዶክስ 2. ፕሮቴስታንት 3. ሙስሊም 4. ካቶሊክ 5. ሌላ ካለ ይጥቀሱ----------	
205	ዋና ስራዘርፍዎ ምንድን ነው?	1. የቤት እመቤት 2. መንግስት ሰራተኛ 3. መንግስታዊ ያልሆኑ ተቋም ሰራተኛ 4. የንግድ ስራ 5. የግል ሰራተኛ 6. ሌላ ካለ ይጥቀሱ----------	
206	የትምህርት ደረጃዎስንት ነው?	1. ማንበብና መጻፍ አለመቻል 2. አንደኛ ደረጃ 3. ሁለተኛ ደረጃ 4. ከሁለተኛ ደረጃ በላይ	
207	የባለቤትዎ የትምህርት ደረጃ ስንት ነው?	1. ማንበብና መጻፍ አለመቻል 2. አንደኛ ደረጃ 3. ሁለተኛ ደረጃ 4. ከሁለተኛ በላይ	
208	የቤተሰብዎ ወርሃዊ ገቢ ስንት ይሆናል?	----------ብር	

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	ስለፍ
3.	አካባቢያዊ ሁኔታን በተመለከተ		
301	የመጠጥ ውሃ አቅርቦት በዋናነት የምታገኙት ከየት ነው?	1. የግል ቧንቧ 2. የጋራ ቧንቧ 3. የቦኖ ውሃ 4. የታሸገ ውሃ 5. ከተጠበቀ የጉድጓድ ውሃ 6. ካልተጠበቀ የጉድጓድ ውሃ 7. ሌላ ካለ ይጠቀሱ…	
302	በቤትዎ የሚገለገሉበት መጸዳጃ ቤት አለዎት?	1. አዎ 2. የለም	

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	ስለፍ
4	የጤና እንክብካቤን በተመለከተ		
401	ልጅዎን ነፍሰጡር በነበረበት ጊዜ ስቀድመው ወሲድ አገልግሎት ከተጀመረ ወዲ ጤና ተሟቷት ስንተ ጊዜ ሄደዋል?	1. አልሄድኩም 2. 1 ጊዜ 3. 2-3 ጊዜ 4. 4 ጊዜ እና ከዚያ በላይ	
402	ልጅዎን የት ነበር የወለዱት?	1. በመንግስት የጤና ተቋም 2. በግል የጤና ተቋም 3. በቤት	

403	ልጅዎን ከወሰዱ በኋላ የድህረ-ወሲድ ስገልግሎት በጤና ተቋማት ስግኝተዋል?	1. አዎ 2. አዴዶስም	
404	ልጅዎ ሲወለድ የነበረው ክብዶት/ መጠን ምን ያህል ነበር?	1. አነስተኛ (<2.5 ኪ.ግ) 2. መካከለኛ (2.5-4ኪ.ግ) 3. ከፍተኛ ክብዶት (>4ክ.ግ) 4. አሳውቅም	
405	ልጅዎን አስከትበሙት ያውቃሉ?	1. አዎ 2. አዴዶስም	አሳውቅም ከሆነ መልሱ ወዶ 407 ዶስፉ
406	ልጅዎ ተከትቦ የሚውቅ ከሆነ ፣ሁሉንም የክትባት ዓይነቶች ወስዷል?	1. አዎ ጨርሷል 2. አልጨረሰም እየወሰዶነው 3. አልጨረሰም እየወሰዶአዴዶስም	
407	ልጅዎን 2 ጊዜ እና ከዚያ በላይ በተዶጋጋሚ (በመካከል ከተቀማጥ ነ፳ 2 ቀናት ልዩነት) ተቀማጥ ያጠቃዉል?	1. አዎ 2. አዴዶስም	
408	ባለፉት ሁለት ሳምንተት ውስጥ ልጅዎ የተቀማጥ ምልክት ታይቶበት ነበር?	1. አዎ 2. አልታበተም	

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	ስለፍ
5	የአጠጋገብ ሁኔታን በተመለከተ		
501	ልጅዎን ሙት ስጥብተው ያውቃሉን?	1. አዎ 2. አዴዶስም	አሳውቅም ከሆነ መልሱ ወዶ 506 ዶስፉ
502	ከወሲድ በኋላ ከስንት ሰዓት በኋላ ነው ልጅዎን ጡት ያጠቡት?	1. በ1 ሰዓት ውስጥ 2. በ24 ሰዓት ውስጥ 3. ከ 24 ሰዓት በላይ	
503	ልጅዎን የመጀመሪዉን ቢጫ መልክ ያለውን የጡት ወተት /ስንገር/ ስጥብተውታል?	1. አዎ 2. አዴዶስም	
504	ከወሲድ እስከ ሶስት ቀን ባለው ጊዜ ስልጅዎ ከጡት ወተት ሌላ ተጨማሪ ምግብ ወይንም ፈሳሽ ነገር ሰጥተውታል?	1. አዎ 2. አዴዶስም	
505	ልጅዎን ለምን ያህል ጊዜ ነበረ ያጠቡት/ያጠባሉ?	---------- ወር	
506	ስልጅዎ ተጨማሪ ምግብ መስጠት የጀመረት መቼ ነው?	---------- ወር	
507	ስልጅዎ የሚመገቡት ምግብ ምን አይነት ነው;	1.ዳቦ 2.እንጀራ 3.ገንፎ 4. ሌላ ካለ ይጥቀሱ	
508	ልጅዎን ለመመገብ የተጠቀመባት መመገቢያ ዘዴ ምን ይመስላል?	1. ማንኪያ 2. ኩባያ 3. በእጅ 4. በጡጦ	

ተ.ቁ	ጥያቄዎች	ምላሽ እና ኮድ	
6	የሰውነት አቋምልኬት		

601	ቁጠት ጠያም ር ዝጠት ?	----------ሴንቲ ሜት ር	

ASSURANCE OF PRIMARY INVESTIGATOR

DECLARATION:

I, the undersigned, declare that this is my original work and has not been presented in this or any other University and all sources of materials used for this thesis have been fully acknowledged.

PI: Shiferaw Abeway

Signature: _____

Date: _____

Place: Addis Ababa University, College of Allied Health Sciences, Department of Nursing and midwifery

This thesis will be submitted for examination with my approval as University advisor.

Primary advisor: Bereket Gebremichael (BSC, MSC,)

Date: _____

Signature: _____

Co-advisor: Mr Rajalakshmi Murugan (Bs.c, Msc, Assit.Prof)

Date_____

signature_____ _____ _____ ____