



**COMPARATIVE STUDY ON NUTRITIONAL STATUS OF UNDER FIVE CHILDREN WITH EMPLOYMENT STATUS OF MOTHERS IN ADAMA TOWN, CENTRAL ETHIOPIA 2013**

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**A research thesis submitted to Jimma University, College of Public Health and Medical sciences, Department of Population and family health in Partial Fulfillment for the Requirement for Master of Public Health Degree (MPH/RH)**

**Jimma, Ethiopia**

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## **ABSTRACT**

**Background:** *Malnutrition remains among the most devastating problems currently being faced by the majority of the world's poor. As of many developing countries malnutrition is one of the most important health and welfare problems among infants and young children in Ethiopia, A complex set of factors cause malnutrition. Inadequate and/or inappropriate dietary intake and infectious diseases are the immediate/direct causes which in turn are related to a number of socio-economic, demographic, child-care, and environmental factors among these factors one is women's employment which has both negative and positive effects on nutritional status of children. There is conflicting information on the effect of maternal employment on child nutritional status.*

**Objectives:** *To determine the effect of maternal employment status on nutritional status of 6-59 month-old children in Adama town*

**Methods:** *Community based comparative cross-sectional study design was used. A multistage sampling technique was used to draw a sample of 319 non-employed mothers and 319 employed mothers, A total of 638 study participants were included and interviewed using a structured, pre tested questionnaire. Anthropometric measurements were taken using standard procedures and appropriate quality control measures. Height/length and weight of children was converted to Z-score of height for age, weight for height and weight for age by using WHO anthro software, the z-score indices were calculated using WHO 2007 growth reference. The data was entered using Epi Data version 3.5.1 and analyzed using SPSS version 16.*

**Result:** *The prevalence of stunting, underweight and wasting was found to be 33.8%, 12.6% and 8.3% respectively. The result of this study showed that the overall nutritional status of children of employed mothers is significantly better than that of children of non employed mothers, with AOR (95%CI) for stunting 3.12(1.42, 6.83) ,underweight 3.06(1.61,5.83) and wasting 3.12(1.42,6.83).*

**Conclusion and recommendation:** *The result of this study showed that there was statistically significant difference in child nutritional status (stunting, underweight and wasting) among children of employed and non-employed mothers. Concerted efforts should be made to greatly decrease the number of malnourished children, by educating and motivating the public, empowering women through education and other affirmative action.*

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## **ACCRONYMS**

AIDS	Acquired Immuno Deficiency Syndrome
CM	Centimeter
EDHS	Ethiopian Demographic and Health Survey
HIV	Human Immuno Deficiency Virus
JU	Jimma University
NCHS	National Center for Health Statistics
NGOs	Non Governmental Organizations
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
US	United States
WHO	World Health Organization
PCA	Principal Component Analysis

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Adequate nutrition is essential in early childhood to ensure healthy growth, proper organ formation and function, a strong immune system, and neurological and cognitive development. Economic growth and human development require well-nourished populations who can learn new skills, think critically and contribute to their communities (1)

Malnutrition is the condition that results from taking an unbalanced diet in which certain nutrients are lacking, in excess or in the wrong proportions. A number of different nutrition disorders may arise, depending on which nutrients are under or over abundant in the diet, in most of the world, malnutrition present in the form of under nutrition, caused by a diet lacking adequate calories and protein, which is more common in developing countries (1, 2).

Malnutrition remains among the most devastating problems currently being faced by the majority of the world's poor. As of many developing countries malnutrition is one of the most important health and welfare problems among infants and young children in Ethiopia studies showed that is a result of both inadequate food intake and illness, Inadequate food intake is a consequence of insufficient food available at the household level, or improper feeding practices, or both (4, 5).

Children in early stage require most attention, as this is the period of rapid growth and development, which makes them highly vulnerable to malnutrition. During this period child is mostly dependent on mother for all her nutritional needs. Hence it is argued that the mother being the major care provider for the child during preschool period, her status in the family may have bearing on nutritional status of her child (6).

Traditionally, a woman's place has been her home and a generation ago, her employment outside her home was looked down by the society. This situation has now changed and women have started seeking employment outside their homes, these entering the work field have both negative and positive effects, the one is that it increases the family income and it may give the women some economic independence and status in the society. It however also increases her work load and cuts into the time that she has to spend with her children (7-9).

## **1.2 Statement of the problem**

Only two years remain to achieve Millennium Development Goal 4 (MDG 4), which calls for reducing the infant and child mortality rate by two-thirds between 1990 and 2015. In Sub-Saharan region since 1990 the infant mortality rate has dropped by 28 percent. However, at the global level progress is behind the target, and the target is at risk of being not accessed by 2015 (10).

It is estimated that more than one-third of under-five deaths are attributable to under nutrition every hour of every day, 300 children die because of malnutrition and is an underlying cause of more than 2.6 million child deaths every year, a third of the global total of child deaths, globally, one quarter of under-five children are stunted in developing countries this figure is as high as one in three. Sub-Saharan Africa and South Asia have particularly high prevalence, at almost 40 per cent and 39 per cent respectively. The prevalence rate of stunting and underweight among Ethiopian children is one of the highest in the world which is 44.4%, and 28.7% respectively even higher than the average prevalence rate for Sub Saharan African countries (1, 11,12).

There is a general consensus today that a complex set of factors causes malnutrition. Inadequate and/or inappropriate dietary intake and infectious diseases are the immediate/direct causes which in turn are related to a number of socio-economic, demographic, child-care, and environmental factors among these factors one is women employments (13).

In today's world, there is a need for women to enter the workplace due to various reasons; financial needs, self actualization, etc. Globally 48% of women above the age of 15 years are in the labor force. Women's participation in the work force in developing countries has been increasing steadily over the last several decades, In Ethiopia, the proportion of women currently employed rises from 27 % in 2005 to 38% in 2010 (12,14).

Activities carried out by women such as breast feeding, preparing food, and seeking preventative and curative medical care are crucial for children's healthy development , women also play an important roles as generators of family income, whether in household farms or businesses or as wage employees. This inevitable change, women entering the work field have an effect on the child care and development (7).

The overall effect of maternal employment on children's dietary patterns and diet quality is hard to predict. Although some aspects of diet quality related to income might be improved other aspects related to the caregiver's time availability might be worsened, greater use of prepared foods, diet patterns such as skipping meals and frequency of meals and snacks could also be either improved or worsened, because of increased financial resources on the one hand and reduced supervision on the other (15).

The fact that women have dual responsibilities placed on them; to provide care and to provide income, justifies a particular focus on the relation of maternal employment to child nutritional outcomes. So, there is an argument that income earned by mother or maternal employment has a direct effect on childcare, nutritional status of children and the mother themselves. Such argument, however, has not been substantiated by studies from developing countries (8).

Therefore, it is important to assess the nutritional status of children is affected more by the time constraints of women who perform the dual role of a mother, or by the increased income generated by the mother's employment.

## CHAPTER TWO

### 2.1 LITERATURE REVIEW

Malnutrition can take a number of forms – stunting, wasting and micronutrient deficiency, commonly affects all groups in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development (2, 11).

#### *Global situation*

Worldwide, malnutrition and specific nutrient deficiencies are the leading underlying cause of immune deficiency, leading to infections and other diseases. Of the 13-14 million children dying each year in developing countries, 70 percent die of infectious diseases and most are malnourished. Malnutrition remains one of the most common causes of morbidity and mortality among children throughout the world. Malnutrition has been responsible, directly or indirectly, for 60% of the 10.9 million deaths annually among children under five over two-thirds of these deaths, which are often associated with inappropriate feeding practices, occur during the first year of life. The burden of under nutrition is still a major public health problem especially in resource poor countries. Under nutrition remains a major cause of disability and mortality ranked as the top cause of global burden of disease and underlying 53% of deaths in children under five years (3-5).

Malnutrition alone is responsible for over half the under-five-year-old deaths in developing countries, making it one of the most important public health problems. Ninety percent of the world's stunted children live in 36 developing countries. If current trends continue, the lives of more than 450 million children globally will be affected by stunting in the next 15 years (11,16,17).

The prevalence of malnutrition has been declining in many parts of the developing world but Sub Saharan Africa is the only exception where the prevalence of child malnutrition is on the rise currently. Currently, 195 million under-five children are affected by malnutrition; 90% of them live in sub-Saharan Africa and South Asia. At least 20 million children suffer from severe acute malnutrition (SAM), and another 175 million are undernourished and deaths from malnutrition are increasing on daily basis in the region (18, 19).

### ***Ethiopian situation***

Malnutrition is one of the most important health and welfare problems among infants and young children in Ethiopia. Studies have shown that a large proportion of children have been suffering from malnutrition and that child malnutrition is a serious problem. The prevalence rate of child malnutrition among Ethiopian children is higher than the average prevalence rate for Sub Saharan African countries in Ethiopia the under-five mortality rate was 88 per 1000, stunting prevalence was 44.4%, and underweight prevalence was 28.7% (12, 21 23).

In Ethiopia, child under nutrition rates are among the highest in the world, A considerable effort to monitor child malnutrition rates over the last two decades shows that, despite some improvements, approximately half of the children under five are still malnourished and under nutrition contributes to country's high under-five mortality 53 percent of child deaths (20, 22).

### ***Impact of malnutrition***

Under nutrition remains a major cause of disability and mortality, the potential negative impact of Child under nutrition goes beyond the individual, affecting society and future generations. Under nutrition hampers both human and economic development. Most deaths of children 6-59 months old are related to malnutrition and infection, even for those children who survive, long-term malnutrition causes devastating and irreversible damage, prevents children from reaching their full physical and mental potential (11).

Health and physical consequences of prolonged states of malnourishment among children are: delay in their physical growth and motor development; lower intellectual quotient, greater behavioral problems and deficient social skills; susceptibility to contracting diseases and suffer from chronic illness. Also Child malnutrition impacts cognitive function and contributes to poverty through impeding individuals' ability to lead productive lives and undermines economic growth and perpetuates poverty (21, 22).

### ***Factors influencing nutritional status of children***

The immediate determinants of a child's nutritional status are the child's dietary intake and health. These are, in turn, influenced by three underlying household-level determinants: food security, adequate care for mothers and children, and a proper health environment. Finally, the underlying determinants are influenced by the basic determinants: the potential resources available to a country or community, and a host of political, cultural and social factors that affect their utilization (8).

Studies conducted in developing countries have identified several factors associated with under nutrition, including low parental education, poverty, low maternal intelligence, food insecurity, maternal depression, rural residential area and sub-optimal infant feeding practices. Lack of maternal autonomy within the family is also recognized as a key determinant of child under nutrition (17).

Care for mothers and children concerns appropriate provision of time, attention and support in the household and communities, in order to support physical and mental needs of a child and a mother. Studies showed that the main household level socio economic determinant of child nutritional status include, household economic status, access to water and sanitation services, women's status relative to men, maternal education and employment status of mothers (21).

Currently most mothers have become part of labor force compared to previous time, over the past quarter century, women have joined the labor market in increasing numbers. Between 1980 and 2009, the global rate of female labor force participation rose from 50.2 percent to 51.8 percent, Female labor force participation in Sub-Saharan Africa is 61 percent, In many developing countries, over nutrition and under nutrition in children are seen alongside the rise of middle class communities and increased participation of women in the workforce (14,24-26).

The effect of maternal employment on the nutritional status of children has been controversial, can affect children's nutritional status in two basic ways, It can have both positive and negative implication on children's dietary intake. The employment of mothers adds to family income and this may help to ensure stable supply of quality food through increased expenditure. On the other hand, mother has to work away from home, thus taking away from time she would spend for caring and supervision of the activities of their children, and preparation of food (15, 21).

Evidences suggest that unemployed mothers' children had a better nutritional status than that of employed mothers' children, study conducted in India identified that children of the unemployed mothers weighed significantly higher than the children of the employed mothers. The children of the unemployed mothers also stood significantly taller than the children of the employed mothers and prevalence of under nutrition (88.46%) was found in children whose mothers were working by occupation, whereas children of housewives were found to be 59.22% undernourished they mentioned that, the mothers working outside are not able to take proper care of their child as compared to mothers who were housewives and are able to spend maximum time with their children & are more conscious about their child's health and they tend to look after their children in a better way, this finding also supported by other study done in Ethiopia, that children of employed mothers were found to have high underweight and stunting proportion 77.4 % and 80.6 % in comparison to children of unemployed mothers where the prevalence of underweight and stunting was 46.8 % and 48.0 % respectively. And stated that the reason could be most of the working mothers in the study had little or no access to the income they generated (6, 9, 11, 26)

A study conducted in US to explore relationship of maternal employment, household nutrition and obesity, also indicate that maternal employment is associated with a decrease in time spent on food preparation and an increase in expenditure on away-from-home food and is also associated with a decrease in quality of food-intake and an increase in obesity risk (28).

Another study conducted in Ethiopia to assess the role of maternal characteristics on nutritional status of Ethiopian children in 2006 revealed that Employment of mothers has a negative impact on WAZ score such that a child whose mother had been employed has an poor nutritional status than a child whose mother had no employment in the prevalence of stunting and underweight. The investigator explains that Absence of substitute caretaker in place of mothers or the lack of capacity of the substitute caretaker to appropriately care contributes for negative impact of maternal employment (21).

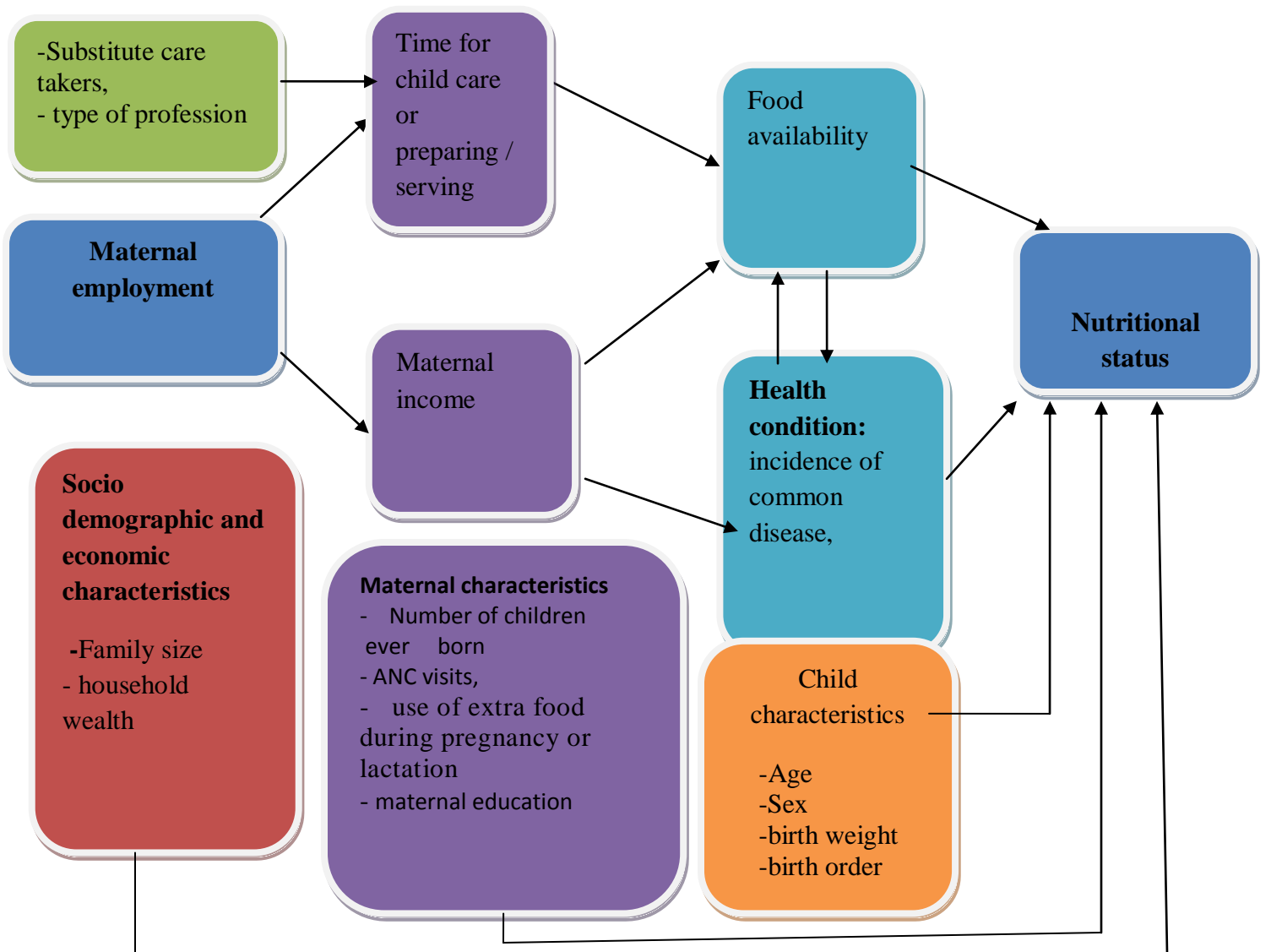


Maternal employment outside the home to have a positive impact on children's nutrition status, studies showed that economically independent women are more likely to be able to use their knowledge to maintain good nutrition and health for their children than economically dependent women. The higher income of families with working mothers should lead to increased food expenditures and a higher-quality diet in those dimensions that might be constrained by lack of income. Food security can also be expected to improve (29, 30).

Maternal employment also could be as a protective factor in child nutrition. It can decrease the risk of malnutrition if it results in greater decision-making authority in the home and more money which can be spent on food and resources for child care which is in line with a study conducted in Malaysia, by the year 2012, among 142 children aged 4-6 years old showed that prevalence of severely wasting was higher in unemployed mothers' (17%) children than in employed mothers' (8%), another study done in Tanzania on 2010 showed that mothers working in professional occupations had children with decreased level of wasting and stunting than other occupations, it suggests that these results are most likely because professional work requires more education and pays better than many other occupations (9,15).

In the other way there are studies that revealed no difference between nutritional status of children for working and non-working mothers studies conducted, in US and Indonesia in 2009 and 2011, suggest that there is no enough evidence that maternal employment deteriorates children's nutritional outcomes, and results do not necessarily support for positive effects of maternal employment (31, 32).

Mothers' employment status has potential implications for virtually all aspects of children's growth development, and nutrition. Although some aspects of diet quality related to income might be improved other aspects related to the caregiver's time availability might be worsened, the relationship between maternal employment and nutritional status of under five children are complex issue surrounded with controversies. Therefore it is important to identify whether the wellbeing of children affected more by the time constraints of women employment, or by the increased income generated by the mother's employment



**Figure 1: Conceptual Frame work of the study**

## **2.2 SIGNIFICANCE OF THE STUDY**

The Ethiopian government women's policy aims at creating an opportunity that encourages women participation in the labor force. Like many developing countries, Ethiopian mothers are the main providers of primary care to their children. This dual burden of the mothers to provide care and to provide income may have influence on care and nutritional status of children. Therefore, it is important to identify whether nutritional status of children is affected more by the time constraints of women who perform the dual role of mother, or by the increased income generated by the mother's employment. The finding of this study help to understand the contribution of maternal employment on nutritional status of children thus influence the policy makers in setting strategy to enhance factors that improve nutritional status of children and to formulate policies or choose appropriate interventions for combating or preventing malnutrition. Also it will also provide important information for NGOs working in the area of child malnutrition in the country and specifically for those working in Adama town administration. It also helps for researchers as baseline information for further study.

## **CHAPTER THREE**

### **OBJECTIVES OF THE STUDY**

#### **3.1 General Objective**

To determine the effect of maternal employment on nutritional status of under five children in Adama town, central Ethiopia

#### **3.2 Specific Objectives**

- To describe the nutritional status of 6-59 month old children of employed and unemployed mothers in Adama town
- To compare the nutritional status of children 6-59 months of age among employed and unemployed mothers in Adama town.
- To identify factors associated with the nutritional status of 6-59 month old children of employed and unemployed mothers in Adama town.

### **3.3 Research question**

Is there a difference in nutritional status between under five children of employed and non employed mothers?

## **CHAPTER FOUR**

### **METHODS AND MATERIALS**

#### **4.1 Study Area and period**

The study was done in Adama town central Ethiopia, 99 km southeast of Ababa. The town has a total population of 287,437(2004EC) of which 142,233(49.5%) males and 145,204 (50.5) females. The area of the town is 29.86 square kilometers, with a population density of 7,374.82; all are urban inhabitants, there are of 60,174 households' in this city and an average of 3.66 persons per household, 59,431 housing units and 47,140 under five children. There are governmental health facilities (1 hospital, 4 health centers) non-governmental health facilities (3 hospitals,1 health center,48 clinics) .There are also 61 drug stores 28 pharmacies. Data was collected from February 25-March 25 /2013.

#### **4.2 Study Design**

Community based comparative cross-sectional study design was used.

#### **4.3 Population**

##### **4.3.1 Source population**

All mothers of 6-59 month -old children residing in Adama town

##### **4.3.2 Study population**

6-59 month -old children of employed and unemployed mothers, who fulfill the inclusion criteria

#### **4.4 Inclusion and exclusion criteria**

##### **4.4.1 Inclusion criteria**

- 6-59 month -old children residing with their mothers

##### **4.4.2 Exclusion criteria**

- A child whose mother died or a child and mother live separately

## **4.5 Sample size and Sampling procedures**

### **4.5.1 Sample size calculation**

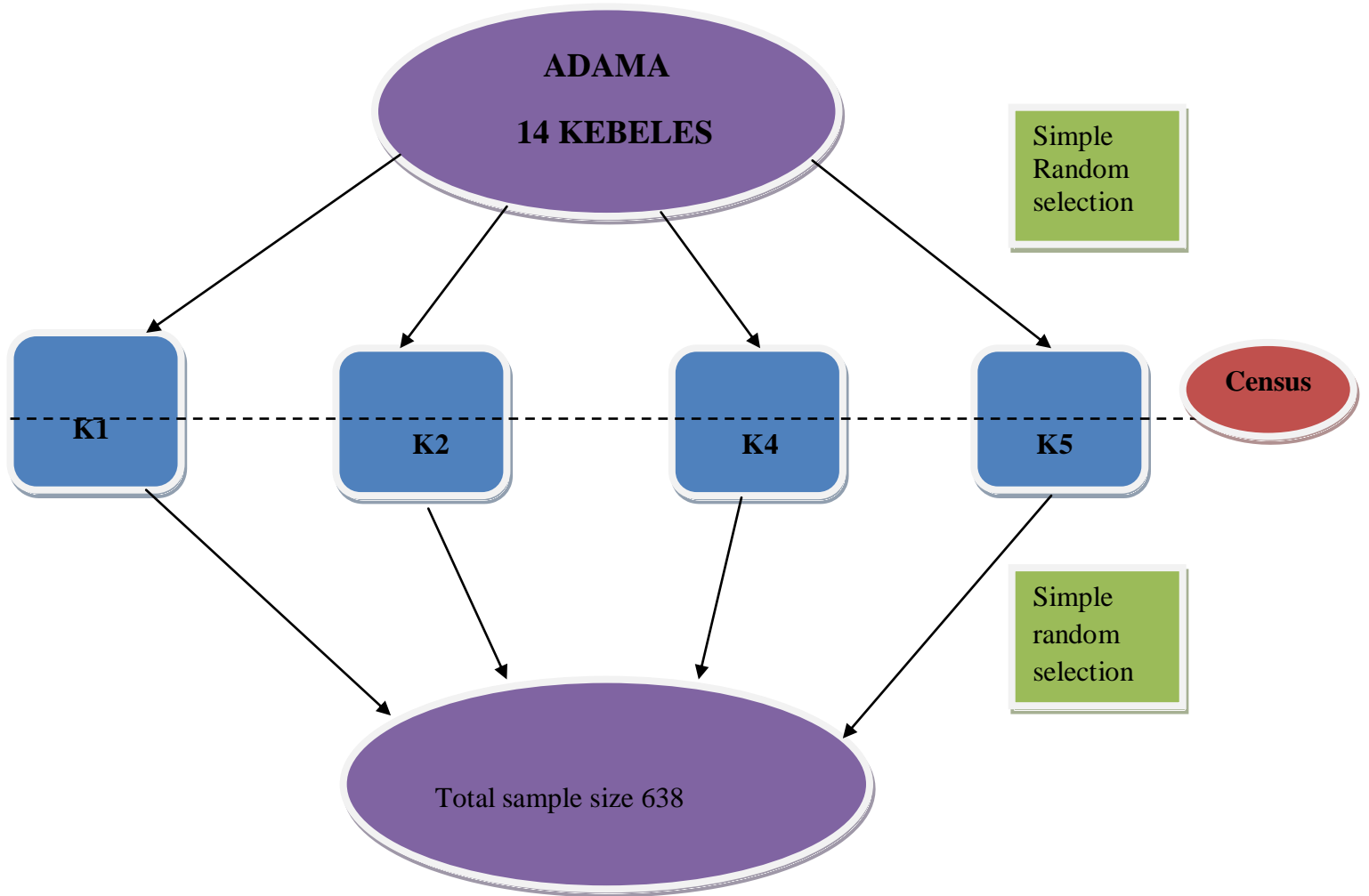
The sample size was determined by using Epi Info- statistical software version 3.5.1 using two population proportion formula and the following assumptions:

- Confidence level = 95%
- Power (1- $\beta$ ): 80%
- Design effect=2
- Ratio =1:1
- Odds ratio =2
- $P_1$ = 46% , proportion of stunting among under five children of unemployed mothers (35).
- $P_2$ = 63%, estimated proportion of stunting among under five children of employed mothers.

By considering 10 % possible non response rate, 319 unemployed and 319 employed mothers were included.

### **4.5.2 Sampling procedures**

By using multi stage sampling techniques, from the total 14 kebeles in the town four kebeles were selected randomly using simple random sampling technique. Then complete enumeration of the selected kebeles of the town were conducted before the actual data collection process, to know the total number of under five children among employed and unemployed mothers and sampling frame was prepared, finally the study participants were selected, among all mothers who fulfill the inclusion criteria from sampling frame by simple random sampling technique, using open Epi software, computer generated random number. In case of households with more than one children of age between 6-59 months, one child was selected randomly using lottery method



**Figure 2 schematic presentation of sampling procedure**



## **4.6 Variables of the study**

### **4.6.1 Dependent variable**

- ❖ Child nutritional status

### **4.6.2 Independent variable**

- ❖ Employment status of a mother

### **4.6.3 Intermediate variables**

- ❖ Substitute care givers
- ❖ Distance to work
- ❖ Household wealth
- ❖ Maternal education
- ❖ Child age
- ❖ Child sex
- ❖ Age of mother
- ❖ Parity
- ❖ Family size
- ❖ Type of profession

## 4.7 Operational and Standard Definitions

1. **Caregiver** – is the most responsible person that provides child care when the mother is out of home for work.
2. **Childcare substitute** - Refers to a type of arrangements to care for child when the mother is away for work.
3. **Employed mother** - A mother is considered to be an “employed mother” if she reports earning income at least for the last one year by working either in government, NGO, public, private sector, or earnings is based on self – managed income-generating work .
4. **Unemployed mother** - A mother is considered to be “non- employed mother “if she reports she is not working at least for the last one year and dependent on someone else for earnings (these include, house-wives,).
5. **Stunting** -- Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the WHO reference population are considered short for their age (stunted), or chronically malnourished (33).
6. **Severely stunted** -- Children who are below minus three standard deviations (-3 SD) from the median of the WHO reference population are considered severely stunted (33).
7. **Wasting** -- Children with Z-scores below minus two standard deviations (-2 SD) from the median of the WHO reference population are considered thin (wasted) or acutely malnourished (33).
8. **Severely wasted** -- Children with a weight-for-height index below minus three standard deviations (-3 SD) from the median of the WHO reference population are considered severely wasted (33).
9. **Underweight** -- Children with weight-for-age below minus two standard deviations (-2 SD) from the median of the WHO reference population are classified as underweight (33).
10. **Severely underweight** -- Children with a weight-for-age index below minus three standard deviations (-3 SD) from the median of the WHO reference population are considered severely under weight (33).

11. **Wealth Index**- is a composite measure of the cumulative living standard of a household. The wealth index is calculated using easy-to-collect data on a household's ownership of selected assets, such as television and radio, types of water access and sanitation facilities. Generated with a statistical procedure known as principal components analysis (PCA), the wealth index places individual households on a continuous scale of relative wealth. Each household asset for which information is collected is assigned a weight or factor score generated through PCA. The resulting asset scores are standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. These standardized scores are then used to create the break points that define wealth index as poor, middle and rich.

## **4.8 Data collection**

### **4.8.1 Data collection tools**

Data were collected using interviewer administered pre-tested structured questionnaire adapted from relevant literature modified to the local context (34). The instrument comprises five parts the first part assess socio-demographics and economic characteristics, followed by child characteristics such as child age, sex, birth weight, and vaccination status of the child were assessed. Part three and four addressed maternal characteristics and environmental condition finally on section five maternal work characteristics was measured.

### **4.8.2 Measurement**

#### **Weight**

UNICEF seca Electronic personal Scale (seca 881U) was used to weigh the study participant placed on a hard board over a flat surface bare foot wearing light underclothing or a diaper. It was calibrated against known weights regularly. Weight was recorded to the nearest 100 grams.

#### **Height**

Height was measured in a lying position with standard measuring board for children of age under two years (below 85 cm) and for children above two years in standing position using Seca portable stadiometer height measuring instrument (Seca 214) with precision of 0.1 cm

#### **MUAC**

MUAC was measured on left arm, half way between the olecranon and acromion process using non stretchable tap to the nearest 1mm

### **4.8.3 Data collectors**

Six data collectors who are diploma nurses and one BSc health officer were recruited for supervision. And training was given to the data collectors and supervisors for two days on how to interview mothers, fill questionnaire and how to take anthropometric measurements.

### **4.8.4 Data collection procedure**

Interview was conducted with mother of the children to fill the questionnaire. Height weight and MUAC measurements were taken from the child immediately following the interview. For those mothers who are employed data collection time was arranged by considering their working time, on weekend and out of regular working time.

## **4.9 Data quality control**

The questionnaire was prepared in simple understandable English language and translated into Amharic

The data collectors and the supervisors were trained for two days on data collection technique, particularly in the proper filling of questionnaire, and the use of the weight and height scales and how to measure. The data collection instrument was pre-tested with a 5% of sample population in adjacent kebeles to see for accuracy of responses and to estimate time needed. Modification was made on the instrument as necessary.

Weighing and height/length scale was calibrated against known weights and length test scales regularly. In order to minimize intra observer errors two measurements of height and weight for each child was registered by single observer, and the third measurement was considered for those cases where the difference between the two measurements was greater than 0.5 cm or 0.1 kg. The data collection process was closely monitored by supervisors and the principal investigator. The completeness and consistency of the data was checked before the study participant leaves. Extreme values of z-score,  $>5$  or  $<-5$  were excluded from the analysis.

## **4.10 Data Processing and Analysis**

The height/length and weight of children were converted to Z-score of height for age, weight for height and weight for age by using WHO anthro software. Data was entered using EPI-data version 3.5.1 and analysis was done using SPSS version 16.0. Descriptive statistics were computed for all variables according to type. Frequency, mean and standard deviation was produced for continuous variables while categorical variables were assessed by computing frequencies and proportions. Bivariate analysis was done to see the association between independent and outcome variables. Multiple logistic regression was used for the final model variable that shows significant effect at p value  $< 0.25$  to control the effect of confounding variables. Comparisons between employed and non-employed mothers' children nutritional status and the proportion of malnutrition were assessed using chi square test. Reliability test was performed to be involved in measuring the wealth of the households and Chronbach's alpha was calculated to be 0.79 .The tertile (poor, middle and rich) were generated using (PCA) statistical technique.

## **4.11 Ethical Considerations**

Ethical clearance was obtained from health research and post graduate, college of public health and medical science, of Jimma University. Verbal consent was obtained from each study participant. Prior to the study, each participant was fully informed about the nature of the study, the research objectives, All the information collected from the study participants is handled confidentially through omitting their personal identification, conducting the interview in private place. Participants were also informed about their rights to respond or not to respond for the questions. All data collected are kept confidential and used for the study purpose only. Study participants were assured whether there is no potential risk related to measurement or data collection.

## **4.12 Plan for Dissemination of results**

The final result of the study will be submitted to the Jimma university postgraduate school and population and family health department, the report will be submitted to Adama city health department and further effort will be made for publication on local or international journals.

## CHAPTER FIVE

### RESULTS

#### 4.13 Socio, demographic and economic characteristics

A total of 638 mothers with underfive children sampled for the study, the overall response rate was 634(99.4%),

The age of respondents ranged from 16 to 50 years, the mean (SD) ages of the respondents were 28.5(5.5) years. Concerning marital status majority of the respondents 462(72.9%) were married in union and 61(9.6%) were married and lives separately, the rest 44(6.9%), 41(6.5%) and 26(4.1%) were widowed, divorced and single respectively

Majority of the respondent were Orthodox for both employed and non employed groups 322(50.8%) followed by Muslim 204(32.2%). Regarding to educational status, higher number of illiterates among non employed groups 86(27%) whereas 40(12.7%), for employed mothers and nearly half had attended at least primary school 162(49.8%) from non employed and 161(50.2%), from employed mothers. Among mothers who attended college and above majority were employed mothers 46(14.6%) and 18(5.7%) were from the non employed groups. By ethnic composition Oromo and Amhara comprises 218(34.4%) and 180(28.4%) respectively, followed by Gurage 164(25.9%), Tigre 30(4.5%) and 42(6.6%) others (table 1).

**Table 1: summary of socio demographic characteristics of employed and non employed mothers of under five children in Adama town**

Variables		Employment status		p-values
		Employed n(%)	Unemployed n(%)	
<b>Religion</b> N=613	Orthodox Christian	168(52.2)	154(47.8)	0.019
	Muslim	88(43.1)	116(56.9)	
	Protestant	42(13.3)	43(13.5)	
	Catholic	15(49.4)	4(51.6)	
<b>Ethnicity</b>	Oromo	100(45.9)	118(54.1)	0.025
	Amhara	99(55.0)	81(45.0)	
	Gurage	75(45.7)	89(54.3)	
	Tigre	22(47.6)	8(52.4)	
<b>family size</b>	1-3	91(48.4)	97(51.6)	0.298
	4-6	219(51.2)	209(48.8)	
	7-10	6(49.8)	12(50.2)	
<b>Marital status of the mother</b>	Married & live together	199 (43.2)	262(46.8)	0.000
	Married but separated	49(80.3)	12(19.7)	
	Divorced	20(44.3)	25(45.7)	
	Widowed	32(78.0)	9(22.0)	
	Never married	16(61.5)	10(38.5)	
<b>Mother's educational status</b>	Illiterate	40(31.7)	86(68.3)	0.000
	Grade 1-8	161(49.8)	162(50.2)	
	Grade9-12	69(57.0)	52(43.0)	
	College and above	46(71.9)	18(28.1)	
<b>Household wealth score</b>	Low	96(43.8)	123(56.2)	0.056
	Medium	99(50.5)	97(49.5)	
	High	121(55.3)	98(44.7)	



#### **4.14 Characteristics of 6-59 month old children of employed and non employed mothers**

Among the total children 309(48.7%) male and 325(51.3%) were female, majority of the children 383(73.6%) were aged 24 months and older where as 231(36.4%) children were aged between 6 to 23 months. Regarding place of delivery 196(30.7%) children were delivered at home and 438 (69.1%) at health institution. 441(71.1%) were first and second child in birth order for both groups.

According to mother's information and records obtained 301 (95.3%) children of employed mothers and 310 (97.5%) children of non-employed mothers were immunized at least once, of which 253(83.0%) children of employed and 265(83.6%) children of unemployed mothers were fully immunized.

As mentioned by mothers 218 (69.2%) children of employed mothers and 199 (62.6%) children of unemployed mothers measured weight at birth. Hence, from children whose weight was measured, 8(4.2%) were below 2500 gms, of which 6(3%) and 2(1.2%) belong to employed and unemployed mothers respectively. Regarding the feeding patterns of under-five children majority of children, 305 (96.5%) of employed and 313 (98.4%) of unemployed children were breast fed for some period of time. Concerning breast feeding initiation 261(83.7%) children of employed and 301 (95.3%) children of unemployed mothers started breastfeeding within one hour of birth, regarding weaning diets, majority of children starts weaning diets at 6 months 233(73.3%) and 248(78.0%) for children of employed and non employed mothers respectively (table 2).

#### **4.15 Child health status**

Of the total, 65(21.2%) of employed and 42 (12.1%) of unemployed mothers had reported that they started additional food to their child at less than six months after birth. But 26(8.2%) and 33 (10.4%) children of employed and unemployed mothers didn't start additional feeding at six months. almost equal number for both groups 29(9.7%) for employed and, 29(9.3%) children of unemployed had had diarrhea two weeks prior to the survey The prevalence of acute respiratory infection (ARI) was estimated by asking mothers if their children under-five had cough with short and rapid breathing in the two weeks preceding the survey. Regarding with ARI children of unemployed mothers were less likely to have been ill with ARI compared to children of employed mothers 14(37.8%) and 21(70%) respectively (p value <0.05)

**Table 2.Characteristics of 6 -59 months children of employed and non employed mothers in Adama town, Oromia Region, Ethiopia - April, 2013**

Variables		Employment status		p-values
		Employed (n) %	Unemployed(n) %	
Child's sex	Male	148(46.8)	161(52.1)	0.339
	Female'	168(53.2)	157(49.9)	
Child's age in months	6-11	20(38.5)	32(61.5)	0.001
	12-23	51(38.6)	81(61.4)	
	24-35	86(47.5)	95(52.5)	
	36-47	73(52.1)	67(47.9)	
	48-59	50(67.6)	74(32.4)	
Place of delivery	Home	90(45.9)	106(54.1)	0.186
	Health institution	226(51.6)	212(48.4)	
Type of birth	Single	307(49.6)	312(50.4)	0.426
	Multiple	9(60.0)	6(40.0)	
Birth order	First	110(46.4)	127(53.6)	0.331
	Second	104(51.0)	100(49.0)	
	Third	41(51.9)	38(48.1)	
	Fourth	35(51.5)	31(48.5)	
	Fifth and above	14(52.0)	21(48.0)	
Immunization status	Immunized	301(49.3)	310(50.7)	0.133
	Not immunized	15(65.2)	8(34.8)	
Weight at birth	Yes	218(52.3)	199(47.7)	0.079
	No	97(44.9)	119 (55.1)	
Child ever breast fed	Yes	305(49.4)	313(50.6)	0.126
	No	11(68.8)	5(31.2)	
Child age at supplementary feeding started (months)	Less than 6	61(57.0)	46(43.0)	0.195
	At 6	223(48.2)	240(51.8)	
	Above	25(44.6)	31(55.4)	
currently breast fed	Yes	114 (42.5)	134(47.5)	0.002
	No	200(54.9)	164(45.1)	
Child age of 6-12m currently breast fed	Yes	17(29.3)	34(70.7)	0.235
	No	3(47.9)	2(52.1)	
Child age of 12-23m currently breast fed	Yes	36(46.1)	69(53.9)	0.045
	No	21(56.4)	19(43.6)	

#### 4.16 Maternal Characteristics

The overall mean ( $\pm$ SD) of age for the index children's mothers was  $28.6 \pm 6.1$  years ( $29.2 \pm 6.1$  for the employed and  $27.92 \pm 6.1$  for the unemployed). Maternal age, though not statistically significant, was inversely related to child stunting; as maternal age increases above 18 years, child stunting conditions decreases similarly, the mean number of children born to these mothers were  $1.27 \pm 1.4$ . Total numbers of children per household has no statistical association with child stunting or wasting. A large proportion 423 (66.4%) of the mothers [241 (72.8%) of the employed and 182 (59.5%) of the unemployed] ( $P < 0.05$ ) have claimed that they have consumed extra food during pregnancy or lactation. Accordingly, it was learned that consumption of additional supplementary food during pregnancy for mothers had no statistically significant association with both wasting and stunting.

Regarding services utilization during pregnancy, 584 (92.1%) of the mothers have reported visiting antenatal care services at health facilities in the town, From the total 584 (92%) mothers who reported utilization of ANC services, majority 342(54.9%) reported a complete (at least four times or more) antenatal care visit during their last pregnancy. The least number 45(7.4%) of visits was reported for at least two or more visits and some 113 (17.7%) of the mothers reported a single ANC visit during their last pregnancy. On a bivariate analyses, it was possible to learn that as the number of ANC visit increases from one to four or more, though not statistically significant, the prevalence of stunting (not wasting) steadily decreases [OR (95%CI) = 1.31 (0.61, 2.85), 0.98 (0.54, 1.79) and 0.95 (0.44, 1.09)] respectively.

Pertaining to hand washing practices of respondents, majority 415 (65.5%) of the mothers (192 (61.3%) of the employed and 223(69.5% of the non-employed) reported washing of their hands after toilet. only 6 (1.9%) of the employed and 8(2.5%) of the unemployed ones reported to wash their hands all the times required to do so. Condition of hand washing practices is not also associated with child stunting as well as wasting ( $P > 0.05$ ).

The main modalities to wash hands reported by 385 (60.7%) of the mothers was seldom use of soap with water; only 211 (33.5%) of the mothers reported use of soap with water always when they are done it, the rest 38(6%) reported to wash their hands simply by the use of water alone. In the same manner, none of the above hand washing practices were associated with child wasting ; nevertheless, those who practice frequent use of soap and water to wash hands have a 50% reduction in child stunting [OR (95%CI) = 0.51 ( 0.22, 0.98)

**Table 3: Characteristics of Mothers of 6-59 month old Children in Adama town, Oromia Region, Ethiopia - April, 2013**

<b>Maternal Characteristics</b>	<b>Employed No (%)</b>	<b>Unemployed No (%)</b>	<b>p-values</b>	<b>P- valu e</b>
<b>Mothers who consumed extra food</b>				0.0
<b>During pregnancy</b>				01
Yes	232 (55)	190 (45)	0.001	
No	84(39.6)	128(61.4)		
<b>Health status of the mother during their last pregnancy</b>				
Good	283 (49.5)	289 (50.5)	0.24	0.2
Not good (sick)	33 (50.2)	29 (49.8)		4
<b>Mothers who had ANC visit</b>				0.9
Yes	293 (50.1)	292 (49.9)	0.90	0
No	23(46.9)	26(43.1)		
<b>Number of ANC visits during the last pregnancy</b>				
Once	65 (57.5)	48 (42.5)		
Twice	26 (55.3)	21 (44.7)	0.210	
Three times	42 (47.7)	46 (47.7)		
Four or more times	163 (47.0)	184 (53.0)		
<b>Hand washing practices</b>				
After toilet	199 (47.1)	218 (52.3)		
Before preparation of food	55 (45.5)	66(54.5)	0.002	0.0
After preparing food	56 (68.3)	26 (31.7)		02
All the time	6 (42.9)	8 (57.1)		
<b>Modality of hand washing practices</b>				
Using water only	19 (48.7)	20 (51.3)		
Seldom use of soap	184 (47.7)	202 (52.3)	0.166	0.1
Use of soap always	113 (54.1)	96 (45.9)		66

#### **4.17 Environmental Health Conditions**

The main source of water for both employed and unemployed mothers is private tap water as mentioned by 533 (84.1%), 244 (78%) of the employed and 289 (90%) unemployed mothers. The least mentioned water source in the area as revealed by 30 (4.7%) of the responding mothers is private well. This variation by type of water source has no effect on both acute (wasting) and chronic (stunting) nutritional status of the child ( $p > 0.05$ ).

In the same way, 39 (6.2%) of mothers, 28 (8.9%) of the employed and 11 (3.4%) of the unemployed have a special water purification technique before consumption, regardless of the source of water, has no effect on the nutritional status of the child. which means, child stunting and underweight are not related to presence of special water purification techniques ( $p > 0.05$ ).

From the total mothers interviewed, almost all - 598 (94.3%) and 294 (93.9%) of the employed and 304 (94.7%) of the unemployed mothers said that they do have their own private latrine. Thus, private latrine with cemented slab were the main types of latrines owned followed by shared latrines with wooden slab as mentioned by 237 (37.6%) and 197 (31.2%) of the respondents respectively; nonetheless, VIP latrines were mentioned least from all forms of latrines and the remaining families used other forms of latrines. Presence or absence of a latrine or variation by latrine ownership had no statistically significant association with stunting, wasting and under weight ( $P > 0.05$ ).

Regarding the solid waste disposal system of the study area the leading techniques for solid waste disposal mentioned were using the solid waste dumping of the waste to a common waste disposal pit by 395 (61.7 %) families followed by burning 87 (17.7%) ,on the other hand, the least used method identified is open filed disposal as mentioned by only 17 (2.7%) of the responding families. There is no statistical association between solid waste disposal systems available and child wasting or stunting ( $p > 0.05$ ).

In an observation to the living houses, 463 (73%) of the houses had one or two rooms, only a quarter 159 (25.1%) of the remaining houses 96 (30.7%) of the employed and 63 (19.6%) ( $P < 0.05$ ) of the study participants had three to five classes per house; nevertheless, only few 1.9% houses had more than 5 classes per house. In addition, among the houses visited, majority - 385 (60.7%) of them had their own private kitchens separated from the main living room.

**Table 4: Household Level Environmental Health Condition For Mothers Of Under Five Children In Adama City, Oromia Region, Ethiopia - April, 2013**

<b>Environmental Health Conditions</b>	<b>Employed mothers No (%)</b>	<b>Unemployed No (%)</b>	<b>P-value</b>
<b>Source of drinking water</b>			
Private tap	240 (45.0)	293(55.0)	0.000
Public tap	244 (78)	288 (90)	
Private well	22(73.3)	8 (26.7)	
<b>Families with safe water techniques</b>			
Yes	30 (78.9)	8 (21.1)	0.004
No	286(48.0)	310(52.0)	
<b>Families with latrines</b>			
Yes	294 (49.8)	304 (50.2)	0.68
No	18(50.0)	18(50.0)	
<b>Types of latrines available</b>			
Private pit / wooden slab	17 (21.2)	63 (78.8)	0.000
Private slab / cement slab	131(55.5)	105 (44.5)	
Shared latrine/wooden slab	104 (52.8)	93 (49.2)	
Shared VIP latrine	57 (51.8)	53 (48.2)	
<b>Waste disposal system of families</b>			
In a pit	206 (39.1)	185 (60.9)	0.08
Common pit	32 (36.8)	55 (63.2)	
Burning	47 (53.2)	48 (46.8)	
Open field disposal.	7 (15)	10 (48.8)	
<b>Houses having separate kitchen</b>			
Yes	223 (58.2)	160 (41.8)	0.000
No	93(37.1)	158(62.9)	
<b>Number of classes available per house</b>			
1 - 2	214 (46.2)	249 (53.8)	0.009
3 - 5	96 (60.4)	63 (29.6)	
>5	6 (50.0)	6 (50.0)	

#### 4.18 Characteristics of maternal employment

Concerning occupational status about 76(24.9%) of the employed mothers were self employee. The next common occupation was vending 69(22.2) of employed mother the rest 15.4% of mothers worked as daily laborer, and 13.5% , 5.1% of employed mothers worked in private and non- government organizations The remaining 31(10%) worked in governmental organizations. Of those employed most, 287(91.7%) worked between 5-7 days a week, and 264(84.3%) eight and more hours per day. The unemployed mothers were extremely dependent on others, 266(89.9%) on their husband to get earnings and only 61 (23.1%) of mothers decides on the money earned where as 120(38.8%) of the employed mothers decide how to use the money earned.

**Table: 5 employment characteristics for employed Mothers of Under Five Children in Adama Town, Oromia Region, Ethiopia - April, 2013**

Variables		Employed (n) %
Maternal occupation	Self employee	76(24.4)
	Vending	69(22.2)
	Private sector employee	42(13.5)
	Government employee	31(10)
	NGO employee	16(5.1)
	Daily laborer	48(15.4)
Number of days mother works/week	<4 days/week	26(8.3)
	5-7 days/week	287(91.7)
Number of hours mother per day	<8 hrs/day	44(15.4)
	>8 hrs/day	264(84.3)
Child care arrangements	Leaves with adult caregiver	136(43.1)
	Leaves with < 13 years	70(22.5)
	Child is in school	49(15.8)
	Taken with mothers to work area	36(11.6)
	Leaves at child care institution	17(5.5)
Earned birr per month	Less than 500	36(12.8)
	500-1000	105(37.4)
	1000-1500	63(22.4)
	Greater than 1500	77(27.4)

## **4.19 Nutritional status of 6-59 month old children**

### **5.4.1 Stunting**

The overall stunting rate among children of employed and unemployed was found to be 33.8%, which was high in children of non employed (39.5%) as compared to children of employed mothers (28.9%) ( p-value <0.05) From those stunted in the two groups, 10(3.2%) and 16(5.1%) of them were severely stunted from employed and unemployed mothers respectively. Female sex was found to be the less affected in which only 33.8%. Among children of both group, age group 24- 36 months were found to be affected more by stunting from the other age groups. Age group 6-11 months and 49-59 months were found to be less affected when compared with other age groups. As the age increases stunting rate increase and started to decrease at the age of 48-59 months in both groups of children.

### **5.4.2 Underweight**

Among a total 12.6% children were found to be underweight, 8.4% and 17.1% belongs to the employed and the unemployed respectively. Of those who were underweight, 2.0% and 5.9% % of children were severely underweight. The most affected Age groups were those between 36-47 months for children of employed, while it was 24-35 months from children of non employed mothers.

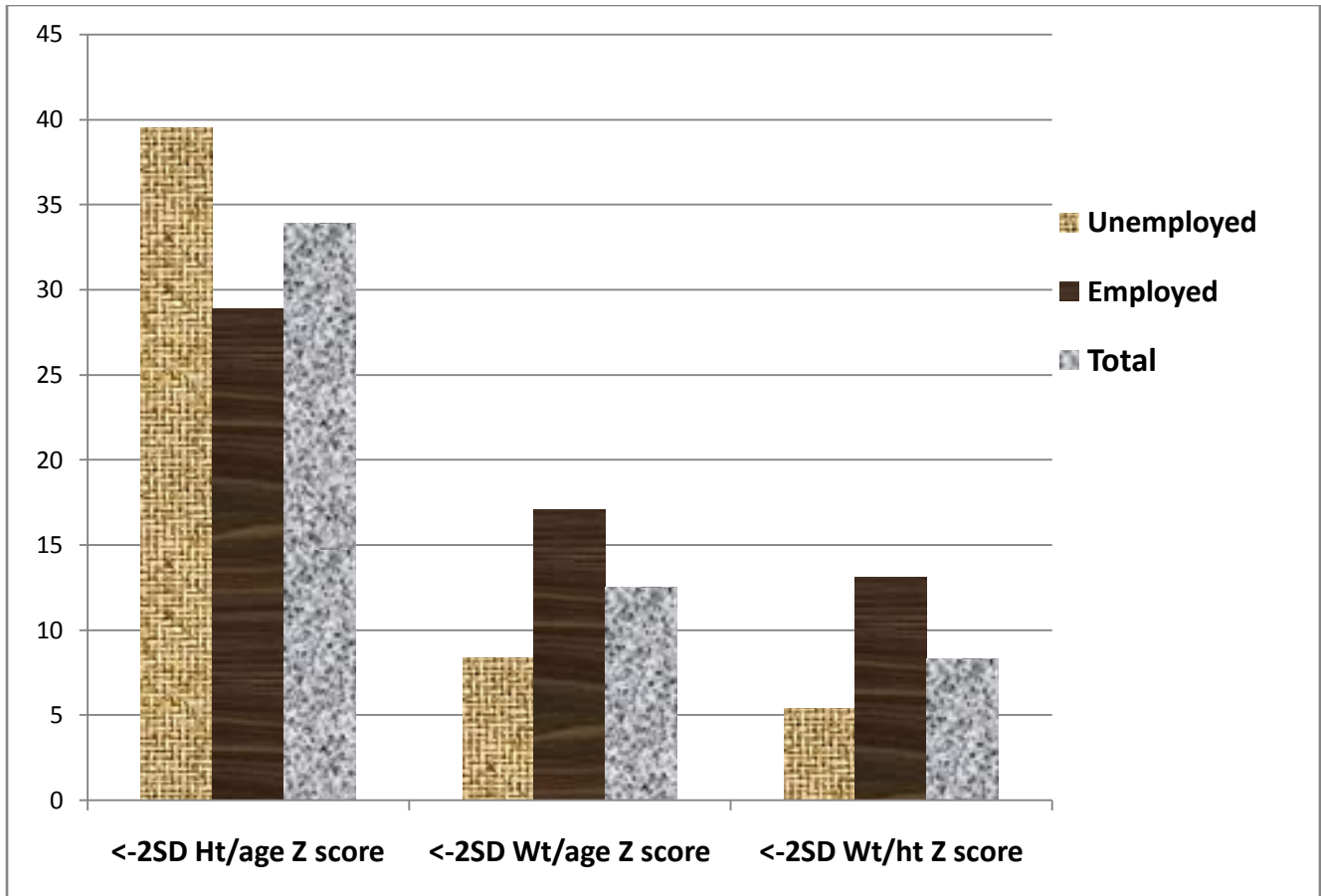
### **5.4.3 Wasting**

The overall wasting prevalence among children of employed and unemployed was 8.3%. Children of unemployed mothers 13.4% and children of the employed groups 5.4% wasted. Of all age groups, 12-23 months old children were the most affected age groups while, age groups 6-11 months old children were found to be the less affected ( table 3).

### **5.4.4 MUAC**

On MUAC measurement from the total children 22(3.5%) were below the normal (<11mm), of which 5(22.7%) from the employed and 17(77.3%) were from the unemployed groups. From those who were undernourished on MUAC measurement majority of them were also under nourished for three indices of anthropometric indicators, height-for-age, weight-for-age and weight-for-height, 15(68.2%), 16(72.7%) and 14(63.3%) respectively.





**Fig.3. the prevalence of under nutrition among 6-59 month old children of employed and unemployed Mothers in Adama town, central Ethiopia 2013**

## 5.8 Factors influencing nutritional status of children

**Stunting:** - stunting was found to be strongly associated with maternal education, marital status and maternal employment Children of mothers who attended college and above were less likely to be stunted [AOR (95% CI) 0.37(0.18, 0.77)] compared to children of illiterate women. Regarding marital status the odds of a child being stunted was 6.2 times as much in single mothers compared to those children of married and live together [AOR (95% CI) 6.20(2.10, 18.3)] concerning employment status children of unemployed mothers are more likely to be stunted compared to children of employed mothers [AOR (95% CI) 1.59(1.08, 2.33)] Whereas no statistically significant difference was seen with regard to other socio demographic variables (table 6).

**Table 6 Association of child and maternal related variable with child stunting in Adama town central Ethiopia 2013**

variables	Nutritional status		Crude OR (95% CI)	Adjusted OR (95% CI)
	Stunted (<-2SD)	Not stunted (>-2SD)		
<b>Employment status*</b>				
Employed	88(54.3)	226(45.7)	1	1
Unemployed	124(39.5)	190(60.5)	1.65(1.18,2.30)	1.59(1.08,2.33)
<b>Marital status*</b>				
Married & live together	149(32.7)	307(67.3)	1	1
Never married	19(73.1)	7(26.9)	5.56(2.30,13.60)	6.20(2.10,18.3)
<b>Maternal education**</b>				
Illiterate	66(52.4)	60(47.6)	1	1
Grade1-8	96(30.1)	223(69.9)	0.39 (0.26,0.60)	0.46(0.29,0.74)
Grade9-12	33(27.7)	86(72.3)	0.35(0.20,0.59)	0.42(0.23,0.76)
College +	17(26.6)	47(73.4)	0.33(0.17,0.63)	0.37(0.18,0.77)
<b>Maternal age</b>				
<24	40(38.1)	65(61.9)	1	1
24-29	135(50.4)	133(49.6)	0.98(0.60,1.60)	1.07(0.64,1.78)
30-34	89(52.0)	82(48.0)	1.17(0.70,1.97)	1.37(0.79,2.36)
≥35	52(59.1)	36(40.9)	1.52(0.84,2.75)	1.78(0.94,3.35)
<b>Household wealth</b>				
Low	80(37.7)	136(63.0)	1	1
Medium	58(27.4)	136(70.1)	0.72(0.48,1.10)	0.87(0.56,1.38)
High	74(33.9)	144(66.1)	0.87(0.59,1.29)	0.98(0.63,1.52)

N.B \* p value <0.05

**Table 8 Comparison of stunting with child and maternal related variables of employed and non employed mothers in Adama town central Ethiopia April 2013**

variables	Employment status							
	Employed				Unemployed			
	stunted	Not stunted	Crude OR(95%CI)	Adjusted OR(95%CI)	stunted	Not stunted	Crude OR(95%CI)	Adjusted OR(95%CI)
<b>House hold wealth</b>								
low	29(30.9)	65(69.1)	1		51(41.8)	71(58.2)	1	
medium	21(21.2)	78(78.8)	0.60(0.31,1.16)		37(38.9)	58(61.1)	0.89(0.51,1.53)	
high	38(31.4)	83(68.6)	1.03(0.57,1.84)		36(37.1)	61(62.9)	0.82(0.47,1.42)	
<b>Marital status*</b>								
Married & live together	54(27.4)	143(72.6)	1	1	95(36.7)	164(63.3)	1	
Never married	11(68.8)	5(31.2)	5.83(1.93,17.5)	5.50(1.70,18.46)	8(80)	2(20)	6.90(1.44,33.2)	
<b>Mothers education *</b>								
Illiterate	15(37.5)	25(62.5)	1		51(59.3)	35(40.7)	1	1
G 1-8	47(29.4)	113(70.6)	0.69(0.34,1.43)		49(30.8)	110(69.2)	0.31(0.18,0.53)	0.33(0.18,0.58)
G 9-12	17(25)	51(75)	0.56(0.24,1.29)		16(31.4)	35(68.6)	0.31(0.15,0.65)	0.31(0.14,0.68)
College+	9(19.6)	37(80.4)	0.40(0.15,1.07)		8(31.4)	10(68.6)	0.55(0.20,1.53)	0.53(0.18,1.53)
<b>Mothers age</b>								
15-35	71(27.0)	192(73.0)	1		105(37.9)	172(62.1)	1	
≥35	17(33.3)	34(66.7)	1.35(0.71,2.57)		19(52.8)	17(47.2)	1.83(0.91,3.68)	
<b>child's sex</b>								
Male	40(27)	108(73)	1		70(44)	89(56)	1	
Female	48(28.9)	118(71.1)	1.10(0.67,1.80)		54(34)	101(65.2)	0.68(0.43,1.07)	
<b>Child's age in month</b>								
6-23	20(28.2)	51(71.8)	1		38(34.5)	72(65.5)	1	
24-59	65(27.4)	172(72.6)	0.96(0.53,1.74)		85(42.5)	115(57.5)	1.4(0.86,2.27)	

**N.B : \*p value < 0.05**

**Wasting:** - Wasting appeared to be influenced more by maternal employment status, in which the odds of a child being wasted was 3.1 times as much in unemployed mothers compared to those children of employed mothers [OR (95% CI) 3.12(1.42,6.83)] Other variables were not associated with wasting among study children.

**Table 9 Association of child and maternal related variable with child wasting in Adama town central Ethiopia 2013**

variables	Nutritional status		Crude OR (95% CI)	Adjusted OR (95% CI)
	wasted(<-2SD)	Not wasted (>-2SD)		
<b>Employment status</b>				
Employed*	15(5.4)	263(94.6)	1	1
Non employed	38(13.4)	246(86.6)	2.71(1.45,5.05)	3.12(1.42,6.83)
<b>Marital status</b>				
Married & live together	34(8.4)	371(91.6)	1	1
Single	3(12.0)	22(88.0)	1.49(0.42,5.23)	1.26(0.31,5.09)
<b>Maternal education*</b>				
Illiterate	21(18.3)	94(81.7)	1	1
Grade1-8	17(6.3)	268(93.7)	0.30(0.15,0.59)	0.39(0.18,0.82)
Grade9-12	10(9.3)	98(90.7)	0.46(0.20,1.02)	0.46(0.17,1.25)
College+	5(7.5)	49(92.5)	0.36(0.12,0.12)	0.21(0.21,2.45)
<b>Maternal age</b>				
<24	10(10.4)	84(89.6)	1	1
25-29	20(8.4)	218(91.6)	0.77(0.35,1.71)	0.09(0.54,2.05)
30-34	15(9.8)	138(90.2)	0.91(0.39,2.12)	1.07(0.44,2.50)
≥35	8(10.7)	67(89.3)	1.00(0.37,2.68)	1.17(0.41,3.34)

**N.B\* p value <0.05**

**Table 10 Comparison of wasting with child and maternal related variables of employed and non employed mothers in Adama town central Ethiopia April 2013**

variables	Employment status							
	Employed				Unemployed			
	wasted	Not wasted	Crude OR(95%CI)	Adjusted OR(95%CI)	wasted	Not wasted	Crude OR(95%CI)	Adjusted OR(95%CI)
<b>House hold wealth</b>								
low	3(3.5)	83(96.5)	1		13(12.1)	94(87.9)	1	
medium	3(3.6)	81(96.4)	1.02(0.20,5.23)		15(16.7)	75(83.3)	1.45(0.65,3.23)	
high	9(8.3)	99(91.7)	1.51(0.66,9.59)		10(11.5)	77(88.5)	0.94(0.39,2.26)	
<b>Marital status</b>								
Married & live together	8(4.7)	162(95.3)	1		26(11.1)	209(88.9)	1	
Never married	1(6.2)	15(93.8)	1.35(0.16,11.5)		2(22.2)	7(77.8)	2.30(0.45,11.6)	
<b>Mothers education</b>								
*								
Illiterate	3(8.1)	34(91.9)	1		18(23.1)	60(76.9)	1	1
College+	7(5.0)	134(95.0)	0.59(0.14,2.41)		11(7.6)	134(92.4)	0.27(0.12,0.61)	0.27(0.11,0.64)
<b>Mothers age</b>								
15-35	13(5.5)	223(94.5)	1		32(12.8)	218(87.2)	1	
≥35	2(4.8)	40(95.2)	0.85(0.19,3.95)		6(18.2)	27(81.8)	1.51(0.58,3.95)	
<b>Child's age</b>								
6-23	2(3.1)	63(96.9)	1		12(12.0)	88(88.0)	1	
24-5	12(5.8)	196(94.2)	1.93(0.42,8.85)		26(14.4)	154(85.6)	1.24(0.59,2.57)	

**N.B : \*p value < 0.05**

**Under weight :** - under weight was found to be strongly associated with maternal education and maternal employment like stunting, Increasing level of maternal education is a protective factor against under-weight, Children maternal education children of who attended college level education and above are less likely to be wasted compared children of unemployed mothers [OR (95% CI) 0.33(0.11, 1.17)]. Regarding maternal employment status the odds of a child being underweight was 3 times as much in unemployed mothers compared to those children of employed mothers [OR (95% CI) 3.06(1.61,5.83)] It's association with regard to other relevant socio demographic variables was not statistically significant

**Table 11 Association of child and maternal related variable with child under weight, in Adama town central Ethiopia 2013**

variables	Under weight		Crude OR (95% CI)	Adjusted OR (95% CI)
	Under weight (<-2SD)	Not under weight (>-2SD)		
<b>Employment status*</b>				
Employed	19(6.3)	284(93.7)	1	1
Unemployed	50(16.4)	255(83.6)	2.93(1.68,5.10)	3.06(1.61,5.83)
<b>Marital status*</b>				
Married & live together	45(10.2)	397(89.8)	1	1
single	8(32.0)	17(68.0)	4.15(1.70,10.16)	3.81(1.32,11.02)
<b>Maternal education*</b>				
illiterate	32(26.0)	91(74)	1	1
Grade8-12	23(7.4)	286(92.6)	0.23(0.13,0.41)	0.30(0.15,0.57)
Grade9-12	10(8.6)	106(91.4)	0.27(0.12,0.58)	0.34(0.15,0.78)
College+	4(6.7)	56(93.3)	0.20(0.07,0.6)	0.33(0.11,1.17)
<b>Maternal age</b>				
<24	14(14.0)	86(86.0)	1	1
25-29	31(12.2)	224(87.8)	0.85(0.43,1.67)	0.94(0.45,1.67)
30-34	16(9.6)	150(90.4)	0.65(0.30,1.41)	0.65(0.30,1.41)
≥35	8(9.4)	77(90.6)	0.64(0.25,1.60)	0.64(0.25,1.60)

N.B\* p value <0.05

## CHAPTER SIX

### DISCUSSION

The overall child malnutrition (stunting, underweight and wasting) among children of employed and unemployed mothers was found to be 33.8%, 12.6% and 8.3% respectively. This finding is also very close and consistent with the national EDHS 2011 survey results and so many other studies conducted in Sub-Saharan Africa region (12).

The results of this study showed that high prevalence of stunting, under weight, and wasting were observed among children of unemployed mothers. Accordingly, children born to unemployed mothers had added risk of becoming stunted than those mothers who were employed. This finding is consistent with the finding of a study conducted in Vietnam which reports that the prevalence of underweight, stunting and wasting among children who had a mother who was a farmer or a housewife was higher than that of children who had a mother who was an office worker. This association can be explained by maternal employment increases economic gain of a mother that has a positive impact on children's dietary intake and anthropometry whereas children born to unemployed mothers might have had inadequate access to good nutrition over a long period of time as they may lack the economic means to purchase adequate food for the family than those mothers who are employed (15, 34, 36-38).

Among the socio demographic variables, the nutritional status of children's (stunting, wasting and under weight) found to be influenced by mothers' educational level, this finding is consistent with EDHS 2011 and other studies which show inverse relation of maternal education and child stunting. possible explanation could be educated mothers are more conscious about their child's health and they tend to look after their children in a better way, more aware of the health services available and also the acceptance to utilize the same is better among them. Literate mothers can easily introduce new feeding practices scientifically (21,26,37,39).

This study revealed that the risk of a child being stunted, wasted and underweight was higher among children of single mothers compared to those children of married and live together, This finding is consistent with the findings of a study conducted in Addis which shows children of married women were less likely to be stunted and wasted compared to children of single mothers (34).

According to the finding of this survey, prevalence of stunting was found to be high among males and age group 24-36 months were affected more by stunting from the other age groups, as the age increases stunting was also found to be increase and started to decrease at the age of 49-59 months in both groups of children, similarly EDHS 2011 indicated that male children are slightly more likely to be stunted and highest prevalence of chronic malnutrition found in children age 24-35 months as (12).

Others socio demographic variables like, household wealth and family size, had no influence on nutritional status of children (stunting, wasting and underweight) in the study area. This finding was not consistent with the results obtained in a study done in other parts of Ethiopia (12).

In this study, all maternal characteristics except for maternal employment, maternal education and marital status left insignificant for an association with child nutritional status. Though not statistically significant, maternal age was inversely related to rate of child stunting; as maternal age increases above 18 years, child stunting conditions decreases. Whereas it starts to increase above the age of 35. This might be also related to close care of children by those elder mothers than the youngsters for better nutrition and good health condition of the child. This finding, however, is not consistent with other studies conducted in other parts of Sub - Saharan Africa region (38).

In the same way, all environmental health related characteristics investigated also failed to have a statistically significant association with any of the child nutritional status characteristics (stunting, wasting and under weight). This result is not consistent with the EDHS 2011 and other studies too (4, 12, 21, and 37).



## **CHAPTER SEVEN**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **Conclusion**

The result of this study showed that the overall nutritional status of children of employed mothers is significantly better than that of children of unemployed mothers

It was identified that nutritional status was strongly associated with maternal education. When the level of maternal education increases rate of stunting, wasting and underweight decreased

The study of this result showed that, socio-demographic as well as socio-economic variables except for maternal education, marital status, maternal employment and the modest association of maternal age with stunting; others have no effect on the nutritional status of children in the study area.

Environment related characteristics (drinking water source, availability of water purification techniques, latrine ownership, type of latrine owned, hand washing practices, etc) of the study were not related to the child nutritional status.

Child related study characteristics including child age, birth weight, vaccination status, etc, were also not directly associated with acute as well as chronic nutritional statuses of the child.

## **Recommendations**

Based on the finding of the study, the following recommendations were made:

### **Policy makers**

- Concerted efforts should be made to greatly decrease the proportion of malnourished children, by educating and motivating the public, empowering the women via education and other affirmative action. This is possible through strengthening the currently available sources of information, use of local radio, television as well as other media to disseminate child nutrition related information, giving particular attention for mothers with no employment opportunities.
- Programs to improve women's education combined with comprehensive health and nutrition education interventions to improve maternal feeding practices
- Particular attention has to be given for women's empowerment and male involvement in child health care issues should be given due attention as males were making decision on most of the child health and nutrition matters among this particular study group.

### **Researchers**

- Further studies with a longitudinal study design that can assess the casual association of child nutritional status with maternal, environmental and child health characteristics has to be done to have a clear and more convincing evidences.

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**Annex 1: Informed consent form and information sheet**

My name is \_\_\_\_\_ I am working as data collector in a survey conducted by the collaboration of Jimma University, Medical faculty/Department of population and family health, on effect of maternal employment on nutritional status of under five children. The main aim of this study is to assess the nutritional status of under five children of employed and non employed mothers, during our stay we are going to ask some questions and measure height, weight and mid upper arm of your child, which will take not more that 40 minutes. The participation will not pose any direct harm on your health and daily activities. Any information obtained from you will be held strictly confidential and will only be used for the purpose of this study. your right not to participate in this study, to withdraw at any time of study or to skip questions that you don't want to reply will be respected at any time, however your honest answer to this question is very important for the purpose of the study. After completion of the study, efforts will be made to commence with concerned bodies working on nutritional problems to solve the nutritional problem of under five children. We would very much appreciate your participation in this survey by genuinely responding to the interviews. Are you willing to participate in the study?

Yes \_\_\_\_\_

No \_\_\_\_\_

**THANK YOU VERY MUCH!**

## Annex 2- Questionnaire English version

Jimma University, College of Medical sciences and Public Health

Department of Population and Family Health

Questionnaire to assess the effect of maternal employment on nutritional status of under five children, in Adama town, central Ethiopia, 2013

Questionnaire identification number \_\_\_\_\_

Kebele \_\_\_\_\_

House number \_\_\_\_\_

Interviewer's name and signature \_\_\_\_\_

Supervisors name and signature \_\_\_\_\_

<b>SECTION ONE: socio economic and demographic characteristics</b>			
<b>No</b>	<b>Question</b>	<b>Response</b>	<b>Skip to/Remark</b>
101.	age (in completed year)	Years _____	
102.	Head of the HH	Male Female	
103.	Total family size (How many person live in the HH?)	In number _____	
104.	How many children <5 year live in the HH	In number _____	
105.	religion	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Others -----	
106.	ethnicity	1. Oromo 2. Amhara 3. Gurage 4. Tigre 5. Others _____	

107.	Marital status	<ol style="list-style-type: none"> <li>1. Married and in union</li> <li>2. Married lived separately</li> <li>3. Divorced</li> <li>4. Widowed</li> <li>5. Never married</li> </ol>	
108.	Educational level of mother	<ol style="list-style-type: none"> <li>1. illiterate</li> <li>2. Grade 1-8</li> <li>3. grade 9-12</li> <li>4. Collage and above</li> </ol>	
109.	Educational level of husband	<ol style="list-style-type: none"> <li>1. illiterate</li> <li>2. Grade 1-8</li> <li>3. grade 9-12</li> <li>4. Collage and above</li> </ol>	
110.	Occupation of mother	<ol style="list-style-type: none"> <li>1. Government employee</li> <li>2. Private Sector Employee</li> <li>3. NGO employee</li> <li>4. Self employed</li> <li>5. Daily laborer</li> <li>6. Vending</li> <li>7. No work</li> </ol>	
111.	Occupation of father	<ol style="list-style-type: none"> <li>1. Government employee</li> <li>2. Private Sector Employee</li> <li>3. NGO employee</li> <li>4. Self employee</li> <li>5. Daily laborer</li> <li>6. Vending</li> <li>7. No work</li> </ol>	
112.	Monthly income of the mother	<ol style="list-style-type: none"> <li>1. Less than Birr 500</li> <li>2. Birr 500 - Birr 1000</li> <li>3. Birr 1001- Birr 1500</li> <li>4. More than Birr 1500</li> <li>5. Don't Know</li> </ol>	
113.	Monthly income of the father	<ol style="list-style-type: none"> <li>1. Less than Birr 500</li> <li>2. Birr 500 - Birr 1000</li> <li>3. Birr 1001- Birr 1500</li> <li>4. More than Birr 1500</li> <li>5. Don't Know</li> </ol>	



<b>Information on household characteristics</b>			
114	Does this household currently have any of the following items?	1.yes	0.No
	Private house?		
	Rent house?		
	Shared house?		
	Functioning radio		
	Functioning television		
	Functioning tape recorder/CD player?		
	Kerosene stove?		
	Gas stove?		
	Electric stove?		
	Electric mitad		
	Mobile phone?		
	Fixed phone line?		
	Sofa?		
	Bed?		
	Bicycle?		
	Motor cycle?		
	Car/ truck?		
	Spring mattress?		
	Foam mattress?		
	Grass mattress?		
	Chair?		
	Table?		
	Refrigerator?		

**SECTION TWO: Information On Characteristics of children aged 6-59 months**

No	Question	Response	Skip to/Remark
201.	Child's sex	1. Male 2. Female	
202.	Child's age (in months)	_____Months	
203	Place of delivery	1. Home 2. Health institution	
204	Gestational age at birth	1. Less than 9 months 2. At 9 months 3. Greater than 9 Months 4. Do not know /Not sure/	
205	Type of birth	1. Single 2. Multiple/Twin/	
206	Does the child ever been immunized?	1. Yes 2. No	If no skip to 208
207	If the answer for question number 207 is yes, what type of Vaccination does he/she take? A) From Card ( ) B) Mother's Report ( )	1. BCG only 2. BCG, DPT1, Polio1 3. BCG, DPT1 – 2, Polio1 – 2 4. BCG, DPT1 – 3, Polio1 – 3 5. BCG, DPT1-3, Polio1-3, Meseales	
208	Vit. A supplementation in the past six months?	1. Yes 2. No 3. Don't know/not sure	
209	Was your child weighed at birth	1. Yes 2. No	If no, skip to Q.211
210	How much was the weight?	_____ grams	
211	Did you ever breast fed the child	1. Yes 2. No	If yes, skip to 213
212	If no, reason for not breastfeeding?	Reason_____	

213	When did you start to breast feed the child after birth?	1.Immediately 2.____ Hours (If less than 24 hours record hour) 3.____ Days 4. Don't know/not sure/	
214.	Are you still breastfeed?	1. Yes 2. No	If no, skip to 217
215.	At what age did you start feeding other additional food?	-----Months	
216.	What do you use to feed the child	1. Bottle 2. Cup 3. Spoon 4. Other (specify)	
217.	How many months did you breast-feed the child?	-----Months	
218.	For how many months did you exclusively breast-fed the child?	-----Months	
219	Has the child had diarrhea in the last two weeks	1. Yes 2. No 3.Do not know/not sure	
220	If yes for 219 How frequent in a day	1. Once 2. Twice 3. 3-4 times 4. >5 times	
221	Has the child been ill with cough at any time in the last two weeks?	1.Yes 2.No	
222	If the answer for question 221 is yes, during a cough, did he/she breathe faster than usual with short, fast	1. Yes 2. No 3. Don't know	
223	If the answer for 222 is yes, did you seek advice or treatment for the cough?	1. Yes 2. No	
224	Who is usually taking care of the baby feeding?	1. Mother 2. Sister 3. Grand mother 4. House maid 5. Other (specify)	

225	How did you usually treat your child when get sick	1. Usually home treatment 2. Taking to traditional healers 3. Taking to Health institution 4. Other (Specify)	
226	Presence of edema on the child feet (Observe)	1. Yes 2. No	
<b>SECTION THREE: Information on maternal characteristics</b>			
301	Mother's age in years	Year _____	
302	Total number of children ever born?	In number _____	
303	During pregnancy or lactation, did you consume extra food? (the child under the study)	1. Yes 2. No	
304	Health status during the pregnancy	1. Good 2. Not good/sick	
305	Have you visited health facility for ANC	1. Yes 2. No	
306	How many times you visited health facility for ANC during the pregnancy?	_____times	
307	When do you usually wash your hands? (More than one answer is possible)	1. After latrine use 2. Before preparing food 3. Before serving food 4. Other (specify)	
308	How do you wash your hand?	1. Using water only 2. Using soap some times 3. Using soap always 4. Using ash some times	

**SECTION FOUR: Environmental conditions**

No.	Question	Response	Skip to/ remark
401	What is your main source of drinking water?	1.Private tap 2.Private well 3.Public tap 4. Other (specify)	
402	Do you do anything to the water to make it safer to drink?	1. Yes 3. Don't know  2.no	
404	Do you have latrine?	1. Yes 2. No	If no skip to 406
405	Type of latrine you use? (Observation)	1.Private pit / wooden slab 2.Private slab / cement slab 3.Shared latrine/wooden slab 4.. Shared VIP latrine 5. Other (Specify)_____	
406	How do you dispose garbage?	1. Open field disposal. 2.In a pit 3.Common pit 4.Composting 5.Burning 6. Other (specify)	
407	Type of House (Observation)	1.Tukul/thatched 2. Corrugated Iron Sheet 3. Other(Specify)	
408	Do you have separate room which is used as Kitchen?	1. Yes 2. No	

**SECTION FIVE: Information on Mother's Work Characteristics**

No	Question	Response	Skip to/ remark
501.	Have you taken any job outside home in the last 12 months?	1. Yes 2. No	If no skip to question 507
502	What type of profession does u have?		

503	If the answer for question number 501 is yes, how many days do you work per week	1. 1 day 2. 2 days 3. 3 days 4. 4 days 5. 5 days	
504	How many hours do you work per day?	_____ hours	
505	How much did you earn for this work in Birr per month?	_____ birr	
506	Who decides how the money you earn will be used?	1. Mainly spouse 2. Mainly husband 3. Only husband 4. Both jointly 5. I don't know (not sure)	
507	If "No" for question No. 501, How do you get earnings?	1. From husband 2. From relatives 3. Help from 4. others----- specify	
508	While you are at home, what do you do in your leisure time?	1. Do hand work (crafting) 2. Listen radio/Watch TV 3. Reading 4. Preparing/Cooking food 5. Care for my child 6. Do nothing 7. Others -----	
509	(Only for working mothers) Who usually takes care of your child while you are at work or away from home?	1 = Leaves with adult care giver (husband, grand-mother,/father, siblings, neighbors, friends) 2 = Leaves with child <13 years (Siblings, servant) 3 = Leaves at child care institution 4 = Child is in school 5 = Takes with mother to work	

### Anthropometrical measurement of 6 – 59 months old children

	Measurement one	Measurement two	average
Child weight in kilogram	_____	_____	_____
Child height in centimeters	_____	_____	_____
MUAC in cm	_____	Date_of_birth _____	

## AMHARIC VERSION QUESTIONNAIRE

የአሜሪካ ቃለ መጠይቅ

የመጠይቁ ቁጥር \_\_\_\_\_

ቀበሌ \_\_\_\_\_

የቤት ቁጥር \_\_\_\_\_

የጠያቂ ስምና ፊርማ \_\_\_\_\_

የቆጣሪ ስምና ፊርማ \_\_\_\_\_

አኮኖሚያዊ እና ማህበራዊ ሁኔታዎች			
ተ.ቁ	ጥያቄ	መልስ	ምርመራ
101	እድሜ	አመት	
102	የ ቤት አስተዳዳሪ	1. ሴት 2. ወንድ	
103	አጠቃላይ የቤተሰብ ብዛት (ምን ያህል ቤተሰብ ይኖራል በእዚህ ቤት)	1. በቁጥር	
104	ከአምስት አመት በታች የሆኑ ስንት ልጆች እዚህ ቤት ይኖራሉ	2. በቁጥር	
105	ሀይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ካቶሊክ 4. ፕሮቴስታንት 5. ሌላ	
106	ብሄር	1. ኦሮሞ 2. አማራ 3. ጉራጌ 4. ትግሬ 5. ሌላ	
107	ጋብቻ ሁኔታ	1. ተጋብተው አብረው የሚኖሩ 2. ተጋብተው አንድ ላይ የማይኖሩ 3. የተፋቱ 4. ባል የሞተባት 5. ያላገባች	
108	የእናቶች የትምህርት ደረጃ	1. ያልተማረች 2. ከ1-8 ክፍል 3. ከ9-12ኛ ክፍል 4. ኮሌጅ እና ከዚያ በላይ	
109	የባል የትምህርት ደረጃ	5. ከ1-8 ክፍል 6. ከ9-12ኛ ክፍል 7. ኮሌጅ እና ከዚያ በላይ	
110	የእናት የስራ አይነት	1. የመንግስት ድርጅት ተቀጣሪ 2. የግል ድርጅት ተቀጣሪ 3. መንግስታዊ ያልሆነ ድርጅት ተቀጣሪ 4. የግል ስራ 5. የቀን ስራተኛ 6. ነጋዴ	

		7. ስራ ስለሌላቸው	
111	የአባት የስራ አይነት	1. የመንግስት ድርጅት ተቀጣሪ 2. የግል ድርጅት ተቀጣሪ 3. መንግስታዊ ያልሆነ ድርጅት ተቀጣሪ 4. የግል ስራ 5. የቀን ስራተኛ 6. ነጋዴ 7. ስራ ስለሌላቸው	
112	የእናት ወርሃዊ ገቢ	1. ከ500 ብር በታች 2. ከ500-100 ብር 3. ከ1001-1500 ብር 4. ከ1500 ብር በላይ 5. አይታወቅም	
113	የአባት ወርሃዊ ገቢ	1. ከ500 ብር በታች 2. ከ500-100 ብር 3. ከ1001-1500 ብር 4. ከ1500 ብር በላይ 5. አይታወቅም	
114	የሜገኖችን ገቢ ምን ላይ መዋል እንዳለበት ወሳኝ ማወቅ	1. አብዛኛውን ሚስት 2. አብዛኛውን ባል 3. ባል ብቻ 4. ሁለቱም በጥምር 5. አይታወቅም/እርግጠኛ አይደለም	
<b>ቤቱ ከታች የተጠቀሱትን ቁሳቁሶች ያካትታል</b>		<b>1. አዎ</b>	<b>0. የለም</b>
የግል ቤት			
ከራይ ቤት			
የጋራ ቤት			
የሚሰራ ሬዲዮን			
የሚሰራ ቴሌቪዥን			
የሚሰራ ቴፕ ሪከርደር/ሲዲ ማኞቻ			
የከሰል ማንደጃ			
የጋዝ ማንደጃ			
የኤሌክትሪክ ማንደጃ			
ተንቀሳቃሽ ስልክ			
መደበኛ ስልክ			
ሶፋ			
አልጋ			
ሳይክል			
ሞተር ሳይክል			
የቤት መኪና/የጭነት			
ስፕሪንግ ፍራሽ			
የሰፖንጅ ፍራሽ			
የሳር ፍራሽ			
ወንበር			
ጠረጴዛ			



ፍሪጅ			
<b>ከ6-59 ወር የሆኑ ህፃናት ሁኔታ መረጃ</b>			
201	የህፃኑ/ዋ ያታ	1. ሴት 2. ወንድ	
202	የህፃኑ እድሜ/ወር/	1. ወራት	
203	የትወልድ ቦታ	2. ቤት 3. በጠፍ ተቋም	
204	የህፃኑ በምን ያህል ወሩ ተወለደ	1. ከ9 ወር በታች 2. 9 ወር 3. ከ9 ወር በላይ 4. አይታወቅም/አርግጠኛ አይደለም	
205	የተወለደው አይነት	1. ነጠላ 2. መጋታ	
206	ህፃኑ ከዚህ በፊት የበሽታ ማላክያ ተደርገላታል	1. አዎ 2. አይደለም	አይደለም ከሆነ ይታሰፍ
207	ጥያቄ 206 ማልስ አዎ ከሆነ ምን አይነት ክትባት ተደርገላታል ሀ. በካርድ ላይ የተመዘገበ ለ. በእኛቶች ሪፖርት መሠረት	1. ቢሲጂ (ክንዳቸው ላይ ያለውን ጠባሳ ተመልከት) 2. ዲፒቲ (ሰንት ጊዜ እንደወሰደ ጠይቅ) 3. ሚስልስ (ካርፒ ተመልከት)	
208	<b>በዚህ ስድስት ወር ውስጥ የቫይታሚን ኤ እንክብል ተሰጥቶት ነበር</b>	1. አዎ 2. አልወሰደም 3. አላውቅም	አይደለም ከሆነ ይታሰፍ
209	ህፃኑ ሲወለድ ተመዘኗል	1. አዎ 2. አልተመዘነም	አልተመዘነም ከሆነ 211 ይታሰፍ
210	ሰንት ይመዘን ነበር	1. _____ ግራም	
211	ጠኩ ጠበቁ አያወቅም	1. አዎ 2. አይደለም	
212	ሙሉ አይደለም ከሆነ ምክንያቱ ይጠቀስ	1. ምክንያት	
213	ህፃኑ ከተወለደ በኋላ ከመቼ ጀምሮ ነው ጠኩ መጥባት የጀመረው	2. ወዲያውኑ 3. ከሰዓታት በኋላ /ከ24 ሰዓት በታች/ 4. ከቀናት በኋላ 5. አይታወቅም/አርግጠኛ አይደለም	
214	እስከ አሁን ጠኩ እያጠበሽ ነው	1. አዎ 2. አይደለም	
215	በሰንት እድሜ ላይ ነው ተጨምሮ ምግብ ማስጠኑ የጀመረው	1. ----- ወራት	
216	በምንድን ነው የምትጠቀሙ ምግብ ስትጨው	2. ጠርሙስ 3. ማንኪያ 4. ከባያ 5. ሌላ ካለ ይጠቀስ	
217	ለምን ያህል ወራቶች ነው ጠኩ ያጠበሸው	1. ----ወራት	
218	ጠኩ ብቻ ለምን ያህል ጊዜ አጠብሸው (ሰጠሽው)	1. _____ ወራት	

219	ላለፉት ሁለት ወራት ተቅማጥ ነበረው	1. አዎ 2. አልነበረም 3. አይታወቅም/አርግጠኛ አይደለም	
220	219 ጥያቄ አዎ ከሆነ ለምን ያህል ተከታታይ ቀናት	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. 3-4 ጊዜ 4. 5 ጊዜ በላይ	
221	ላለፉት ሁለት ሳምንታት ህፃኑ ----- ታም ነበር	1. አዎ 2. አልነበረም	
222	221 ጥያቄ ጫስ አዎ ከሆነ በህመሙ ወቅት ከወትሮው በተለየ ሁኔታ ትተነ ፍስ/ይተነ ፍስ ነበር	1. አዎ 2. አልነበረም 3. አይታወቅም	
223	222 ጥያቄ አዎ ከሆነ ክትትል ተደርጎለት ነበር	1. አዎ 2. አልነበረም	
224	ህፃኑን የሚመገበው ማን ነበር	1. እናት 2. እህት 3. አያት 4. ሰራተኛ 5. ሌላ ካለ ይጠቀስ	
225	ህፃኑ ሲታመም ምን አይነት ክትትል ነው የሚደረግለት	1. ሁልጊዜ የቤት ውስጥ እንክብካቤ 2. ወደ ባህላዊ ህክምና በመውሰድ 3. ወደ ጤ ማከል በመወሰድ 4. ሌላ ካለ ይጠቀስ	
226	የ-----መኖር ታይቶበት ያወቃል	1. አዎ 2. አያወቅም	

**የእናቲቱ ሁኔታ የሚያሳይ መጠይቅ**

301	የእናትየው እድሜ	1. አመት ----	
302	አጠቃላይ ምን ያህል ልጆች ወልደዋል	1. በቁጥር ----	
303	በአርግዝና ወቅት ብዙ ምግብ ይመጣቡ ነበር	2. አዎ 3. አይደለም	
304	በእግዝና ወቅት የነበረ የጤ ሁኔታ	1. ጥሩ 2. ጥሩ አልነበረም/ህመም	
305	በ-----ምክንያት ህክም ማከል ሄደው ነበር	1. አዎ 2. አልነበረም	
306	ለምን ያህል ጊዜ ነበር በ----- ምክንያት ወደ ህክምና ማከል የሄዱት	1. -----ጊዜ	
307	ሁል ጊዜ እጅዎትን መቼ ነው የሚታጠቡት /ከአንድ በላይ ጫስ ይቻላል/	1. ሸንት ቤት ከተጠቀሙ በኋላ 2. ምግብ ከማዘጋጀት በኋላ 3. ከምግብ ዝግጅት በኋላ 4. ሌላ ካለ ይጠቀስ	
308	እንዴት ነው እጅዎትን የሚታጠቡት	1. በውሃ ብቻ 2. አንዳንድ ጊዜ ሳመና በመጠቀም 3. ሁልጊዜ በሳመና 4. ሁልጊዜ አመና በመጠቀም	

**የአካባቢ ሁኔታ**

401	ለመጠጥ ወሃ ዋናው ምንጭ ምንድን ነው	1. የግል ከውሃ ጉድጓድ 2. የግል በጥሩ ሁኔታ የተሰራ 3. የህዝብ ጉድጓድ 4. ሌላ ካለ ይጠቀስ	
402	በቤት ውስጥ በቀን የሚጠቀሙት የወሃ	1. --- ሊትር	

	መዝገብ		
403	ሽንት ቤት አለ	2. አዎ 3. የለም	የለም ከሆነ 405 ይለፍ
404	ምን አይነት ሽንት ቤት ነው የሚጠቀሙት	1. የግል ጉድጓድ ሆኖ በአንጨት የተሰራ 2. የግል ሆኖ በሲሜንቶ የተሰራ 3. የጋራ ሆኖ በአንጨት የተሰራ 4. የጋራ ሆኖ ---- 5. ሌላ ካለ ይጠቀሱ	
405	ቆሻሻን እንዴት ያስወግዳሉ	1. ግልጽ መጣያ ቦታ 2. በጉድጓድ ወስጥ 3. የጋራ በሆነ ጉድጓድ ወስጥ 4. በማጠራቀም 5. በማቃጠል 6. ሌላ ካለ ይጠቀሱ	
406	የመኖሪያ ቤት አይነት		
407	ምን ያህል ክፍሎች አሉት/ሜዳ ቤት እና መዘንን ሳያካትት/	1. ----በቁጥር	
408	ለሜዳ ቤትነት የሚገለግል የተለየ ቤት አለ	2. አዎ 3. የለም	
የእናቶች የሥራ ሁኔታ			
501	ላለፉት 12 ወራት ከቤት ወጭ ስራ ነበረዎት	1. አዎ 2. አልነበረኝም	
502	የ401 ጥያቄ አዎ ከሆነ በሳምንት ምን ያህል ቀናት ይሰራሉ	1. አንድ ቀን 2. ሁለት ቀናት 3. ሦስት ቀናት 4. አራት ቀናት 5. አምስት ቀናት	
503	በቀን ለስንት ሰዓት ይሰራሉ	1. ---ሰዓት	
504	ለዚህ ስራ ምን ያህን ብር ያገኛሉ	2. ----ብር	
505	501 ተ.ቁ አይደለም ከሆነ እንዴት ነው ገንዘብ የሚገኘው	1. ከባለቤቱ 2. ከዘመድ 3. ከሌላ ረዳት 4. ከሌላ ከሆነ ይጠቀሱ	
506	እቤት ወስጥ ሰሆኑ በአረፍት ሰዓትም ምን ይሰራሉ	1. የእጅ ስራዎች 2. ራዲዮ ማዳመጥ/ቴሌቪዥን ማጽኑ 3. ማንበብ 4. ምግብ ማበሰል 5. ህፃን መንከባከብ 6. ምንም አልሰራም 7. ሌላ ካለ ይጠቀሱ	
507	ስራ ላላቸው እናቶች ብቻ ስራ በማድረግ ጊዜ ወይም ከቤት ወጭ ከሆኑ ህፃኑን ማን ይንከባከባል	1. ባለቤቱ፣ አያቱ፣/ጎረቤት ወይም ጓደኛ 2. ከህፃኑ ጋር የሚኖር የ13 ዓመት ስራተኛ 3. የህፃናት ማቆያ 4. ት/ት ቤት 5. ከእናቱ ጋር ወደ ስራ ይሄዳል	

የህፃኑ የትወልድ ቀን -----

የህፃኑ ክብደት በኪሎ ግራም \_\_\_\_\_ -

የህፃኑ ቁመት በሴንቲ ሜትር---