ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH

Assessment of Knowledge and Utilization of Growth Monitoring and Promotion for under two children in Butajira, Ethiopia 2017

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APPROVED BY THE BOARD OF EXAMINERS
This thesis, by Luwam Desalegne is accepted in its present form by the board of examiners as fulfilling for the degree of master's in public health nutrition.

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LIST OF ABBREVIATION

AOR	Adjusted Odd Ratio
CSA	Central Statistics Agency
COR	Crude Odd Ratio
CI	Confidence Interval
DDS	Demographic Surveillance System
EDHS	Ethiopian Demographic Health Survey
ETB	Ethiopian Birr
GC	Growth Chart
GM	Growth Monitoring
GMP	Growth Monitoring and Promotion
HEW	Health Extension Worker
MUAC	Mid upper arm circumference
SNNPR	Southern Nation Nationality and People
UNICEF	United Nations International Children Emergency Fund
WHO	World Health Organization

ABSTRACT

Background: United Nations International Children Emergency Fund (UNICEF) defines Growth Monitoring and Promotion (GMP) is a prevention activity comprised of growth monitoring linked with promotion (usually counseling) that increases awareness about child growth; improves caring practices; increases demand for other services, as needed; and serves as the core activity in an integrated child health and nutrition program, when appropriate. This would help parents keep their young children healthy and well nourished. GMP has been implemented in Ethiopia since 2008 as nutrition specific intervention to prevent malnutrition.

Objective: To assess knowledge and utilization of growth monitoring and promotion and identify factor associated with knowledge and utilization of GMP for children under two years in Butajira, SNNPR, Ethiopia.

Method: Community based cross sectional study was conducted from April-May 2017. A total of 548 child mother pair less than 2 years old who resides in Butajira were selected by simple random sampling method. Qualitative study (in depth interview and observation) were also conducted to supplement the quantitative study and to assess the skill and knowledge of health extension workers working in selected heath post. The data was entered using Epidata version 3.1 and analyzed using STATA version 14 software. Multivariable logistic regression model was fitted to predict the association between knowledge and utilization of GMP and their determinants. All statistical analysis was set at 5% level of significance (i.e. $p < 0.05$. The results were reported as Odds Ratio and 95% CI). Appropriate tables and diagram were used to present findings.

Result: Among 507 mother-child pair participates utilization of GMP was fifty five 11% [95%CI=8.4%-13.8%] while three hundred twenty five 64% [95%CI= 60%-68%] of the mothers had adequate child feeding and growth chart knowledge. The result showed that mothers gave birth in the health facility were 1.60 times more likely to be knowledgeable about child feeding and growth chart than those mother gave birth at home [AOR=1.60; (95% CI=1.06, 2.44)]. Whereas those child-mother pair traveled less than one hour to reach to the nearest health facility from their house were 2.06 times more likely to be knowledgeable about child feeding and growth chart than those mother travel more than an hour to reach to their nearest health facility [AOR= 2.06; (95%CI=1.35, 3.13)]. Mothers with elementary educational level were 3.31 time

more likely utilize GMP [AOR=3.31(95%CI=1.50, 6.02)] while mothers with secondary and above education level were 3.33 times more likely utilize GMP than illiterate mothers [AOR=3.33(95%CI=1.30,8.50)]. Regarding occupation of the mother, framers were 4.03 times more likely utilize GMP than house wives [AOR=4.03(95%CI=1.32, 8.50)]. Mothers with child feeding and growth monitoring adequate knowledge were about 5 times more likely utilize GMP than those mother with inadequate knowledge [AOR=4.87(95%CI=1.80,13.16)]. Qualitatively, irregularity of GMP session due to health extension work load, not recording the age and weight of the child accurately, mother wrong belief and skill gap of heath extension workers were challenges of GMP utilization.

Conclusion: growth monitoring and promotion is not implemented as it was supposed to be. More than half of the respondents had adequate child feeding and growth chart knowledge and utilization of GMP is very low in rural kebeles of Butajira. Monitoring implementation of growth monitoring and promotion should be needed throughout different weredas and kebeles that are expected to implement growth monitoring and promotion program.

INTRODUCTION

1.1Background

Malnutrition continues to be one of the world's most serious development problems. Exacerbating the consequences of infectious disease, malnutrition contributes to about 6 million deaths annually of children under 5 years. While low- and middle-income countries bear the brunt of the problem, malnutrition affects both rich and poor countries, particularly the poorest in each nation. Malnutrition 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 (1, 2).

Child growth is internationally recognized as an important public health indicator for monitoring nutritional status and health in populations. There is strong evidence that Growth monitoring and counseling able to detect early the growth and increases contact with health services maternal knowledge motivation to change practices (3, 4).

Starting from early 1980s, growth monitoring was promoted as one of the key components of community nutrition programs. Since then, in areas where growth monitoring and promotion was implemented as part of a package of nutrition and health programs, positive impacts on child growth outcomes have been reported (5,6).

United Nations International Children Emergency Fund (UNICEF) defines Growth Monitoring and Promotion (GMP) is a prevention activity comprised of GM linked with promotion (usually counseling) that increases awareness about child growth; improves caring practices; increases demand for other services, as needed; and serves as the core activity in an integrated child health and nutrition program, when appropriate (5,7). The aim of GMP is to make child growth visible to enable the analysis of causes support the development of corrective actions to address the causes of poor growth, therefore, to allow improving or maintaining the child's growth prevent under nutrition. This would help parents keep their young children healthy and well nourished. Growth monitoring and promotion is usually carried out in health facilities or in the communities. The major advantage of growth monitoring is that it helps families and community workers to identify children with growth failure early when it is easy to help them (5, 7, 8).

1.2 Statement of the problem

According to the 2016 Ethiopian Demographic and Health Survey (EDHS) report, the prevalence of stunting was 38%, underweight 24%, and wasting 10% (9). The total losses associated with under nutrition are estimated at ETB 55.5 billion or US$4.7 billion for the year 2009. These losses are equivalent to 16.5% of gross domestic product of that year. Under nourished children under five are more likely to experience cases of anemia, acute diarrheal syndrome, acute respiratory infection and in some cases, fever. For every additional case of child illness, both the health system and the families are faced with an additional economic cost. Under nutrition is associated with 28% of child deaths. There were an estimated 378,591 additional annual cases of child mortality associated with child under nutrition, in the period from 2004 to 2009. Students who are undernourished are also more likely to drop out of school (10).

The nutritional status of children is directly related to their health condition and mental development which are key determinants of the human and social development of communities around the world. Improvement of nutrition and health increase the chances of child survival and is a pre-condition for economic development (11).

The most cost-effective way to address the pressing public health challenge of malnutrition is to prevent it. That means ensuring that all of the children who are normal weight at birth continue within the normal range, and those who are low weight at birth are brought swiftly into a healthy growth range (7).

Growth monitoring and promotion programs involve the regular weighing of young children to identify growth faltering an early sign of malnutrition before it becomes serious. Effective programs depend on a mother's understanding of the importance of adequate growth and initiation of improved feeding and care practices (1).

There is limited information on factors influencing GMP continuation after completion of immunization. Improvement on GM can only be successfully undertaken if the reasons why mothers do not continue after completion of immunization are determined, so that appropriate actions will be taken (12).

Although good coverage has been shown in small-scale programs, reaching all targeted children is generally difficult to achieve, and attendance is often less than desired. The frequency of GMP

attendance often declined in children of older age groups, and children who were most at risk attended less often than better off children. Health managers worldwide attribute low attendance to a lack of interest by mothers after completion of vaccination, weak awareness campaigns to motivate mothers, and the inability of parents to respond to information provided during the sessions due to illiteracy, inability to understand the growth chart, or lack of access to foods (13).

A study in Bangladesh examined the role of education during the weaning period demonstrating that education on complementary feeding given to mothers was effective in enhancing weight gain despite the fact that no foods were actually provided (11).

Currently, the Government of Ethiopia and a range of non-governmental organizations are working on prevention and promotion activities to fight malnutrition in children. One of these activities is growth monitoring and promotion (GMP). Ideally, in GMP, every child's weight is measured periodically, giving primary focus to children below the age of two years (under-two children). The measurement starts at birth and should be performed on a monthly basis, accurately recorded on a growth chart, and interpreted. Additionally, the health workers provide services, such as giving information through counseling, facilitating communication, and interacting with mothers in a way that aims to generate adequate maternal action to promote child growth. There is a lack of knowledge among mothers regarding what, when, and how to feed their children. Mothers' awareness of GMP was low compared to their awareness of immunization (14, 15).

Growth monitoring and promotion has been implemented as nutrition specific intervention in Ethiopia since 2008 but according to the researcher knowledge there is no enough article done on knowledge of the mother about growth monitoring and promotion (child growth and child feeding) and the utilization of it.

1.3 Significance of the study

This study intends to determine if mothers with under two years old children are aware of the availability of GMP, their knowledge on components of the child growth monitoring and promotion and whether or not they are utilizing the service. The result of this study may help to fill the information gap about the service uptake and identifying difficulties in service provision and challenges to service utilization among eligible children in the study area. It may also be used as reference since much has not been done on this topic in our country. It also gives insight to governmental and non-government organizations on the current utilization of Growth Monitoring and Promotion program (GMP) on Nutrition Intervention Appropriate recommendations were made based on the result in which supervisors form federal ministry of health and non-governmental organization working on GMP, program managers (public health and nutrition), health care providers including the health extension workers can use for improving ways of service provision and quality of the service. To the knowledge of the researcher, there has not been enough research undertaken on the deep knowledge and utilization of GMP in Ethiopian context and particularly in the SNNP Region. Thus, this study might bridge the gap and could possibly serve as a stepping stone for further research.

2. LITERATURE REVIEW

Literature reviewed utilization of GMP globally, regionally in Africa and also in Ethiopia scrutinizing demographic, economic, social and cultural factors of the mothers or care givers and health system factors that are likely to influence access and utilization of the service.

2.1 Over View

Child under nutrition is highly prevalent in low-income and middle-income countries, resulting in substantial increases in mortality and overall disease burden (2). Growth assessment is the single measurement that best defines the health and nutritional status of a child, because disturbances in health and nutrition, regardless of their etiology, invariably affect child growth (16).

Most growth monitoring programs use weight charts to provide a graphic representation of a child's weight-for-age. An undernourished or sick child will have a slower rate of weight gain than a well-nourished, healthy child. Monitoring growth by plotting a child's weight at regular intervals and comparing the pattern of growth to reference curves of healthy children permits early detection of growth faltering. It provides an early warning signal and a trigger for early action (5, 6).

Most commonly GMP is done in the developing world through monitoring weight but can include monitoring length/height is based on the following assumptions:

- Growth is a good proxy for overall child well-being and its measurement serves as a robust indicator.

-Growth is a dynamic process that is made visible by monitoring changes in anthropometric indices and reflects current, not past, events.

- Adequate nutritional (anthropometric) status is dependent on meeting standards for growth velocity (7).

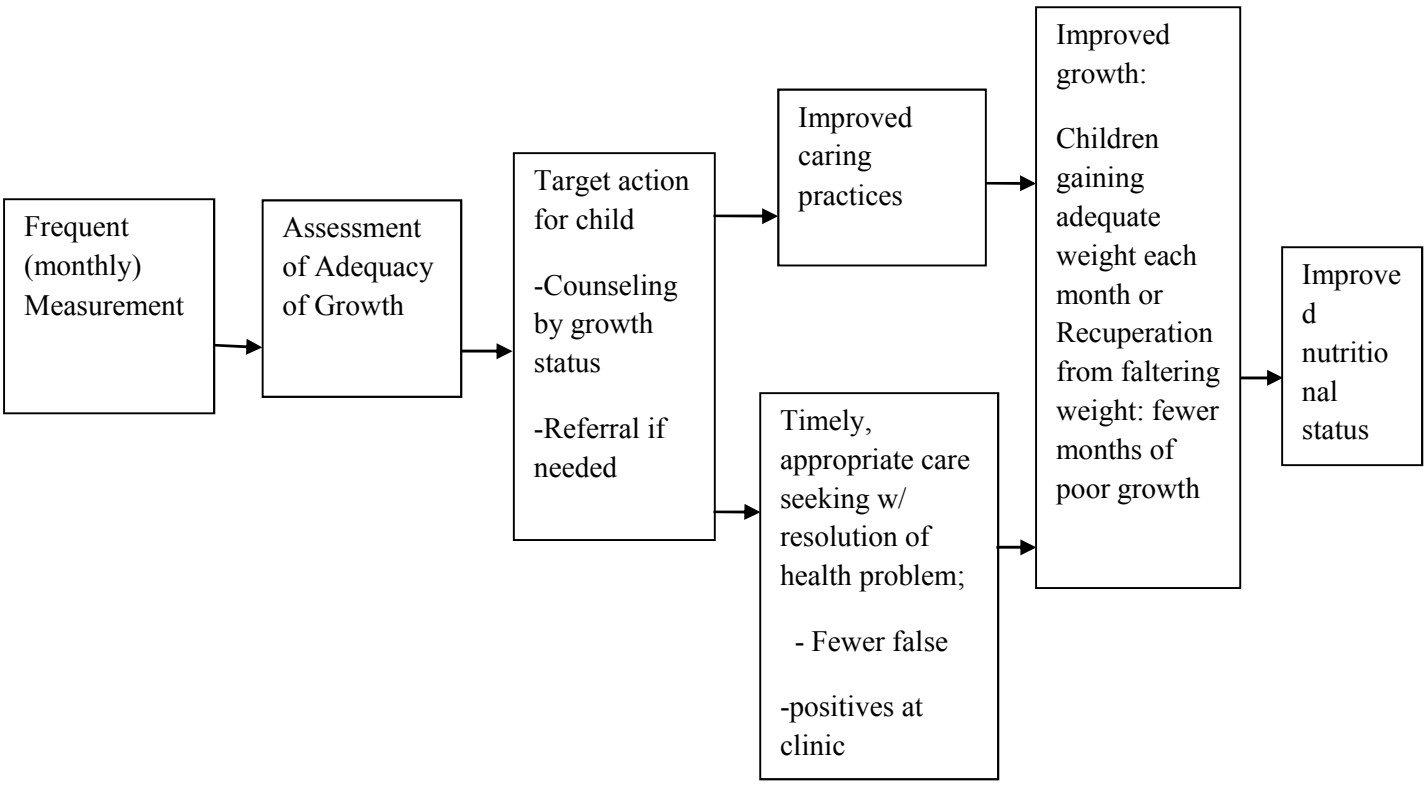


Figure1: Growth Monitoring and Promotion Process by Griffin, 2007.

2.2 Importance of growth monitoring and promotion

Some of the most important purposes of growth measurement are motivating regular contact with mothers, informing them of their child's growth, and acting as an entry point for counseling and negotiation on behavior change to promote growth and contribute to the prevention of chronic malnutrition. Therefore, growth measurement tools should be designed and used with these purposes in mind, the program focus more on interpreting the measurement of a child's growth and focus more on delivering quality services and effective counseling and negotiation for behavioral change. In addition to that it is also abundant international evidence that reducing malnutrition confers significant social and economic benefits in terms of better health outcomes, improved cognitive development, and higher earnings in adulthood and a growing number of studies show that community based nutrition programs can make important contributions to reducing malnutrition (5, 12, 17).

There is evidence from different countries of Africa stated that children whose growth is monitored and whose mothers receive nutrition and health education and have access to basic child health services have a better nutritional status and/or survival than children who do not.

There is tentative evidence from a large-scale program in Brazil that participation in growth monitoring confers a significant benefit on nutritional status independent of immunization and socioeconomic status. There is evidence from India and Bangladesh that growth monitoring has little or no effect on nutritional status in large-scale programs with weak nutrition counseling. There is evidence from Tamil Nadu in a randomized trial that when mothers are visited fortnightly at home and have unhurried counseling, no additional benefit accrues from the visual depiction of growth on a chart. There is some evidence that growth monitoring can improve utilization of health services (5, 13, 18).

Monitoring growth of children also relates closely to the rights of the child. The United Nation Convention of the Rights of the Child states that children should not be allowed to become malnourished. The World Summit for Children (1990) called on countries to institutionalize child growth monitoring and promotion programs as one of the actions to prevent malnutrition. The rationale for this derives from the fact that growth is a good proxy for child well-being, and the child who has healthy growth will not be malnourished. The child's right is closely linked to that of the parents, who have a right to know if their child is growing well and be able to correct any deprivation causing poor growth. It is imperative for governments and technicians to develop approaches and technologies that permit families and communities to effectively promote the healthy growth of children (6, 11, 19).

Nutrition education is a key component of GMP because improvements in child nutrition so often depend on changing feeding and care giving practices in the home. Individual nutrition counseling is the cornerstone of effective and efficient GMP. The approach of regularly weighing and assessing the growth of a child provides the opportunity for individualized nutrition education or counseling with targeted messages related to how well the child is growing, how healthy he or she is, what and how often the child eats, and the caregiver's resources and motivation. GM is the focal point for stimulating a discussion on growth, health, and feeding for that child. Growth information also helps to target special assistance and gives an indication of the impact of new behaviors (7, 11).

2.3 Coverage of GMP

A study done in Kenya stated that little is known on factors affecting GMP continuation after completion of immunization. Improvement on GM can only be gained if the reasons why mothers do not continue after completion of immunization are determined, so that appropriate actions will be taken (12).

A summary review also stated that even though good coverage has been shown in small-scale programs, reaching all targeted children is generally difficult to achieve, and attendance is often less than desired. The frequency of GMP attendance often declined as the child gets older and children who were most at risk attended less often than better off children. The reason for low attendance to a lack of interest by mothers after completion of vaccination, weak awareness campaigns to motivate mothers, and the inability of parents to respond to information provided during the sessions due to illiteracy, inability to understand the growth chart, or lack of access to foods (13,18).

A cohort study done in Rwanda showed that the monthly average utilization rate of community-based growth-monitoring services in the catchment area of Ruli hospital reached a plateau of between 75 and 79% during the last three years of the study period despite the implementation of efforts to improve this rate. It is lower than the periodic utilization rate calculated every 6 months which takes into account the proportion of children who have attended community services at any time in the 6 month evaluation period. They prefer to follow the monthly average utilization rate, because it more realistically expresses how community services are being utilized during the entire six month period. It also showed that the adequate utilization of services is very low and that it decreases with the age. This rate further decreases after 6 months of age, where as it is at this age that the risk of malnutrition increases. They proposed that sensitization to the importance of community nutritional services needs to be strengthened so that children under 36 months of age use the community services correctly. The duplicate growth monitoring cards kept by the health centers should allow for appropriate documentation to assess whether the child is adequately utilizing services (20).

2.4 Challenges of GMP implementation

A qualitative study done in Belgium among medical officers of Africa stated that mothers were said to use their own criteria to evaluate the growth and health of their children and to visit health services only for obvious illness of their children. The District Medical Officers frequently stated that parents failed to understand the growth chart, mainly because they are illiterate or not educated (21).

Other qualitative study done in Tigray region stated that various challenges were identified by both mothers and health workers, including a lack of awareness in mothers about childhood malnutrition and about the GMP program. The problem relating to not following growth monitoring is the absence of direct benefit. Mothers do not bother knowing their children's status; rather they usually look for supplementary food or other benefit. There were also mothers who always missed their GMP appointments because they gave priority to household activities and social events (14).

2.5 Factor affecting utilization of GMP

A study done in Kenya showed that Mothers of higher socio-economic status were more likely to continue with GM probably because they could afford transportation costs to the health facilities or were of higher education level and may be better understood the need for this practice. In this study, maternal knowledge on GM positively influenced the practice of continued GM. The coverage for continued GM was low with the lowest coverage among children 12 to 24 months (12).

The study done in Nigeria on health professionals suggested that high level of awareness and positive attitude towards GMP and growth chart (GC) of majority of respondents were at dissonance with their level of knowledge of the GMP procedures and the interpretation of the GC. None of the doctors in this study knew the lower limit of normal for birth weight to be 2.5kg (22). Other study done in Ghana also revealed that there is knowledge gap on health workers about nutrition counseling or child feeding (23). The study done in Tigray region stated that work burden , lack of training on how to counsel, shortage of time to the health extension workers is one of the factor affecting effective utilization of GMP (24).

The study done in Gambia and Niger stated that stunting, wasting and underweight head count, depth and severity are higher among children whose mothers had no secondary education for both the countries than mother with only primary education (25).

2.6 Effect of Maternal knowledge on child growth

A study done in Indonesia suggested that the level of maternal exposure to nutrition and health information, with the low coverage of growth monitoring programs in rural areas, contribute to the prevalence of underweight and stunting among under-five children (26).

Trend of analysis done in 2008 revealed there was a significant reduction in malnutrition assessed by underweight or stunted linear growth except in sub-Saharan Africa and Central America. Improvements in women's education contributed by far the most, accounting for 43% of the reduction in child malnutrition between 1970 and 1995, while improvements in per capita food availability contributed about 26 % (11).

A study done in rural community of Ghana stated that there was no discernible association between maternal childcare knowledge scale and child's nutritional indicators among children below six months. However, among children aged 6-36 months, there was significant association between nutritional status and maternal childcare knowledge (27).

Other intervention study in Bangladesh suggested that intervention (nutrition education) could help mothers to read and understand growth chart and this motivates mother to improve their daily child care activity (28).

2.7 Conceptual framework

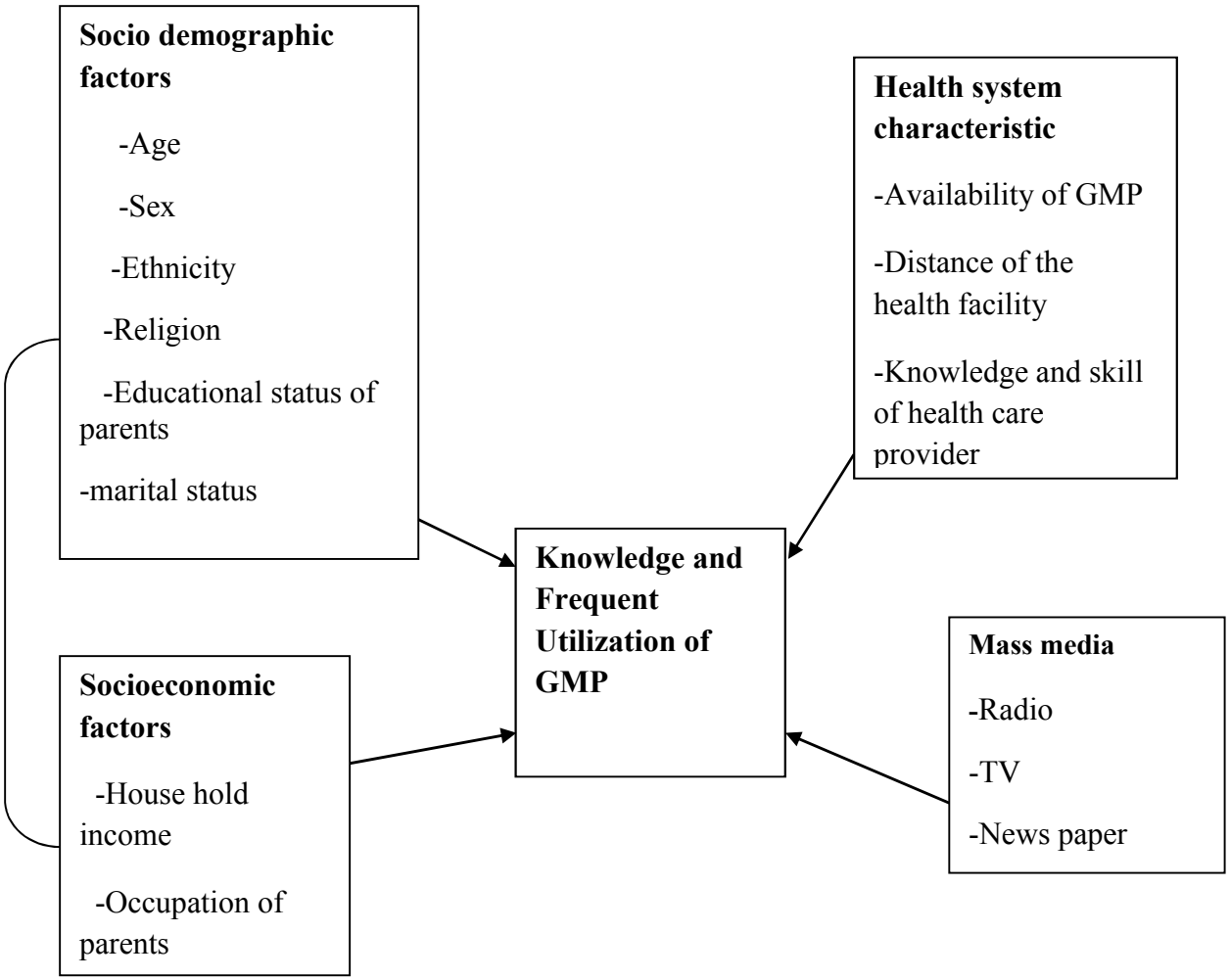


Figure 2: Conceptual frame work developed by the researcher after doing reviewing literatures

3. OBJECTIVE

3.1 General objective

To asses knowledge and utilization of growth monitoring and promotion for children under two years old in Butajira, SNNP, Ethiopia.

3.2 Specific objective

3.2.1 To assess the knowledge of child feeding and growth chart among mothers with under two children.

3.2.2 To assess the utilization of growth monitoring and promotion among mothers with under two children.

3.2.3 To identify factors affecting growth monitoring and promotion utilization and knowledge.

4. METHDOLOGY

4.1 Study area and study period

This study was conducted in Butajera area which is located in Guraghe zones of Southern nations, nationalities and people region (SNNPR) of Ethiopia. The estimated size of the district is 797 km, of which Butajira town covers approximately 9 km^2.The area is located 130 km south of Addis Ababa. Nine rural and one urban area were under follow up for over 25 years in Butajira by the Butajera health and demographic surveillance system. Meskan woreda consists six of the kebeles namely Dirama, ShersheraBido, Bati, Dobena, Misrak Meskan and Wurib, whereas MarekoWoreda consists of Hope and Mekakelegna Jare Demeka kebele. Dobena and Yeteker are the other two kebeles from Silite Zone. There is one health post on each of the nine rural kebeles. Each of the rural kebeles had one health post. The major language is Guragigna with variations among different tribal groups. Amharic official language, is widely spoken in the area, and is also a written language. The total estimated populations of the nine rural kebeles are 114,525 and the population of under five year old children is 14.5% (29) of the total population. The main occupations are farming in rural areas and small-scale business in town. About 77 %of the population is illiterate. Illiteracy is greater among the rural population and females (30).

This study was conducted from April-May 2017.

4.2 Study design

Community based cross-sectional study was conducted to assess the knowledge and utilization of growth monitoring and promotion among care givers with children (0-23 months old children) and factor affecting GMP utilization in Butajira, Gurage zone. Qualitative study (in depth interview and observation) was also conducted to supplement the quantitative study on health extension workers.

4.3 Population

4.3.1 Source population

All child mother pair aged less than 24 months who resides in Butajira during the study period were the source population.

4.3.2 Study population

Quantitative study: Randomly selected child mother pair aged less than 24 months who resides in Butajira during the study period.

Qualitative study: Health extension works working in health post of Butajira.

4.3.3 Inclusion criteria

All child mother pair less than 24 months of age for whom sampling frame were available.

4.4 Sample size determination

A single population proportion formula was used to estimate the sample size. The prevalence 26% was taken for GMP utilization of Ghana (31) with, confidence level of 95% (level of significance, α=0.05) marginal error of 4%, considering 5% non-response rate. The prevalence of 32% is taken for GMP knowledge from a study in Ghana (31). The final total sample size was 548.

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

Where: n = The desired sample size

$Z\alpha/2$=standard score corresponding 95% confidence interval (1.96)

d = degree of precision 4%

p=prevalence of utilization of GMP

With 5% non-response rate.

Table 1: sample size calculation for the two outcome variable knowledge and utilization

Variables	Place	Proportion used for calculation of sample size	Calculated sample size with non-response rate
Utilization	Ghana	P=26% Non response rate 5% $=\frac{(1.96)^2*0.26*0.74}{(0.04)^2}$	485
Knowledge	Ghana	P=32% Non response rate 5% $=\frac{(1.96)^2*0.32*0.68}{(0.04)^2}$	548

Total sample size=548

4.5 Sampling procedures

All the nine rural kebeles in which growth monitoring and promotion implemented were included to obtain the desired sample size. Initially sampling frame containing list of mother child pair less than 2 years old along with their date of birth and house number was obtained from Butajira site. This sampling frame was obtained for a total of 2073 mother child pair less than two years old pair registered by Butajira DSS. By using this sampling frame simple random sampling technique was used to select a total of 548 samples from the kebeles.

4.6 Variables

4.6.1 Independent variables

The independent variables in this study were demographic factors such as age, sex, educational status, marital status, ethnicity and religion. Socio-economic factors such as, house hold characteristics (wealth), occupation of the parents. Health system characteristic included knowledge and skill of the health care provider, availability and accessibility of growth monitoring and promotion services within the study area, availability and accessibility of health service for the child.

4.6.2 Dependent variables

- Knowledge of the growth monitoring and promotion (mothers knowledge on growth chart and child feeding).

- Utilization of growth monitoring and promotion services by mothers with under two years old children.

4.7 Standard and operational definition

Standard definition

- **Growth monitoring (GM):** is the process of following the growth rate of a child in comparison to a standard by periodic anthropometric measurements in order to assess growth adequacy and identify faltering at early stages**.** (UNICEF definition)

Operational definition

- **Knowledge :** A mother is considered knowledgeable if she currently knows to start breastfeeding within one hour of delivery, exclusive breastfeeding for the first six months and introduction of different food groups (water, grain, cereal, meat, milk, egg, vegetable and fruit) within 6-8 month of age with continued breast feeding, first thing child take after birth should be breast milk, increase the frequency of meal for sick child, increase the frequency of meal as child age increase and ability to read the growth chart. Know the benefit of regular GMP utilization. From total knowledge score 17 mother who scored 11 from the total score were considered as having adequate knowledge and mother scored below 11 were considered as having inadequate knowledge. In addition, correct answer is recorded as "Yes" and "No" recorded as incorrect and don't know answers.
- **Utilization:** ability to attend two or more of growth monitoring and promotion sessions for children less than six month and ability to attend three or more of growth monitoring and promotion sessions for children above six month .In addition, It should be plotted or recorded on the child growth chart.
- **Family health card:** is book which contains the weight for age child growth chart for both sex and used to plot the growth pattern of the child attending GMP session and it is held by the mother.
- **Family folder for health extension package:** is card which contains the weight for age child growth chart for both sex and used to plot the growth pattern of the child attending GMP session and it is held by the health extension worker.
- **Children:** those young people below the age of two years old.

- **Growth monitoring site:** is a place health extension workers give and child mother get the growth monitoring and promotion session.
- **Growth chart (GC):** is a diagram used to follow child growth (weight) over time.

4.8 Data collectors and collection procedures

Quantitative study- Data was collected after three days of training about the objective, definitions of terms that are in the questionnaire and on issues of confidentiality and privacy by long term experienced data collectors and supervisors. Lecturing, mock interview and actual field practice were used to train data collectors. Interviewer administered questionnaire was used for data collection.

Qualitative study- Semi structured open ended questionnaires was used to collect data as in depth interview guide from selected health extension workers of Butajira. The data was collected by the principal investigator. In depth interview and observation was conducted to asses one of the factors knowledge and skill of the health extension workers. During in depth interview, tape recording and note taking was done by the principal investigator and note taker until the data gets saturated. Non participatory observation check list was used. Observation was done in health post and while growth monitoring and promotion session was given by the health extension workers to mothers with under two children.

4.9 Data quality management

Quantitative study- Data quality was assured before, during and after data collection process. Before data collection: A close ended structured questionnaire was adopted from a similar study conducted to collect data. The questionnaire was translated from English to Amharic and back to English by a person well versed with both languages to check for language consistency. Individuals who are fluent in speaking both Amharic and Guragigna was recruited so that they can serve as a translator if a study participant can't speak Amharic. Pretesting of questionnaire was undertaken to check the understandability by taking 5% of sample volunteer mother in the community which were not included in the actual data collection. Amendments were made according to the results/comments from the pretest respondents by discussing with both data collectors and supervisors.

During data collection: There was a close day to day supervision in the data collection process. Collected data was checked for completeness and consistency by the supervisors and principal investigator each day.

After data collection: The supervisors and the principal investigator together rechecked the completeness and consistency before transferring it into computer software. Non over lapping numerical code was given for each question and the coded data entered into EPidata version 3.1 prepared templates.

Qualitative study- During data collection a note taker was hired to take field notes and tape records after oral consent secured from study participants. The in depth interview guide was first prepared in English language and translated to Amharic language and the Amharic version was used in all interviews. The principal investigator was moderator the in-depth interviews with selected study participants. A note taker was recruited to take hand written field notes and tape records, which was trained by the principal investigator. The interview was conducted in a quite environment to ensure the privacy and confidentiality of study participants. On average the interview lasts one hour.

For non-participatory observation check list was obtained and field note were taken by the principal investigator. Health extension workers and care givers were blinded about the specific lists on the check list and field note to minimize observation biases. The observation was made after in depth interview. Five health posts and three growth monitoring site were included. On average the observation lasts one hour and half.

4.10 Data Analysis procedures & presentation

Quantitative study- Collected data was coded, cleaned using EPI data 3.1 and the data was analyzed using STATA version 14. Continuous variables were expressed as mean ± standard deviation. Categorical variables were expressed by using frequency and percentage. Cross-tabulation with frequencies and percentage of each variable was performed to explore the relationship between the dependent variable and independent variables. Multivariable logistic regression model was fitted to predict the association between knowledge and utilization of GMP and their determinants. For numerical variables first, bivariate analysis was done to identify candidate variables for multivariable logistic regression those variables with a $P<0.05$ were

moved to multivariable analysis to identify their significance with the dependent variables. All statistical analysis was set at 5% level of significance (i.e. $p < 0.05$. The results were reported as Odds Ratio and 95% CI). Dependent variables were also reported as (frequency, percentage and 95% CI) Appropriate tables and diagrams were used to present findings.

Qualitative study – Transcription and translation of each tape records were made by principal investigator using MS word and translated data was analyzed and categorized by open code version 4.1. Analysis was done through thematic; those who have the same idea were identified then summarized by the main theme. Non participatory observation was guided by using check list and field note.

4.11 Ethical consideration

Ethical clearance was sought from Research Ethics Committee of the School of Public Health of Addis Ababa University. Permission was asked from woreda health office. Data collection was conducted after verbal and written consent was obtained from participants. Verbal consent was taken from each selected participant after honest explanation of the survey purpose, description of the benefits and an offer to answer all inquiries were made to the respondents. It was explained that answering the interview questions had no harm on the participants and that their participation will help to create awareness concerning the issue. It was also explained that their participation would help the government to make plan to growth monitoring and promotion. Also affirmation that they were free to withdraw consent and to discontinue participation at any time was made. Privacy and confidentiality of collected information were ensured by using anonymous data collection tools.

4.12 Dissemination of results

Result will be communicated to Addis Ababa university school of public health and other responsible governmental and non-governmental organizations to serve as current source of information on the issue. Effort will be made to publish in peer- reviewed journals.

5. RESULT

5.1 Demographic and socio-economic characteristics of households

A total of 548 caregiver child pairs were included in the study; - Complete data was obtained from 507 child mother pair, yielding a response rate of 93%. All of the respondents were mothers of the child. The socio-demographic and economic characteristics of the study population are shown in (Table2). A total of male 265(52.3%) and female 242(47.7%) children under two participated in the study. The mean (±SD) age (month) of the children was 11(±6.3 SD) and ranged from 0 to 23 months. The age distribution of the mothers showed that large proportion 173 (35.7%) belongs to the age group of 25-29.The mean (±SD) age (year) of the mother in the study sample was 28.9(±5.6 SD). The religion distribution showed the majority 418(82.5%) were Muslim. The distribution of the respondent by educational status revealed that 248(48.2%) of women were illiterate. The majority of the mothers were housewives 435 (85.8%) followed by merchant 41 (8.1%) and fathers were farms 407(80.7%) flowed by merchant 38 (7.6%). Majority of them 450 (88.8%) have their own land to cultivate.

Table 2: Demographic and socioeconomic characteristics of the respondents, Butajira, Ethiopia, 2017

Variable		Frequency	Percentage
Child sex	Male	265	52.3
	Female	242	47.7
Child age	0-5month	115	22.7
	6-11month	162	32
	12-17month	131	25.8
	18-23month	99	19.5
Delivery place	Health facility	331	65.3
	Home	176	34.7
Mode of delivery	Vaginal delivery	486	95.9
	Caesarian section	21	4.1
Vaccination	All basic vaccination	237	46.7
	No vaccination	32	6.3
Mother age	15-19	11	2.2
	20-24	84	16.6
	25-29	173	34.1
	30-34	121	23.9
	35-39	90	17.7
	>40	28	5.5
Educational status of the mother	Illiterate	248	48.9
	Read and write	30	5.9
	Elementary	145	28.6
	Secondary and above	84	16.6
Occupation of the mother	House wife	435	85.8
	Farmer	13	6.1
	Merchant	41	8.1
Marital status	Married	500	98.6
	Divorced	6	1.2
Education status of the father	Illiterate	158	31.3
	Read and write	50	9.9
	Elementary	192	38
	Secondary and above	105	20.8
Occupation of the father	Farmer	407	80.7
	Merchant	38	7.6
	Government employee	22	4.4
	Other*	37	7.3
Religion	Orthodox	56	11
	Muslim	418	82.5
	Other*	33	6.5
Ethnic	Gurage	333	65.7
	Silte	118	23.3
	Other*	56	11
Own land to cultivate	Yes	450	88.8
	No	57	11.2
Access to media	Yes	276	54.4
	No	231	45.6
Wealth	Low	169	33.3
	Middle	170	33.5
	High	168	33.1

Father occupation status other*- private employee, daily laborer Ethinicity other* amhara, mareko, meskan, kontoma

Religion other* protestant and catholic

5.2Health service related characteristic

According to the response of participants 267(52.7%) travel less than one hour to reach to their nearest health facility and 54(10.7%) of them travel more than an hour to get to their nearest health facility. Almost half of respondents utilize health post 216(51.5%) more frequently and followed by health center for their child.

Table 3: Availability and accessibility of health service for child mother pair, Butajira, Ethiopia, 2017 (n=507)

Variable		Frequency	Percentage
Time to reach to the nearest health facility	>one hour	240	47.3
	<one hour	267	52.7
Most frequently utilized health institution for the child	Health center	206	40.6
	Health post	216	51.6
	Other*	40	7.9

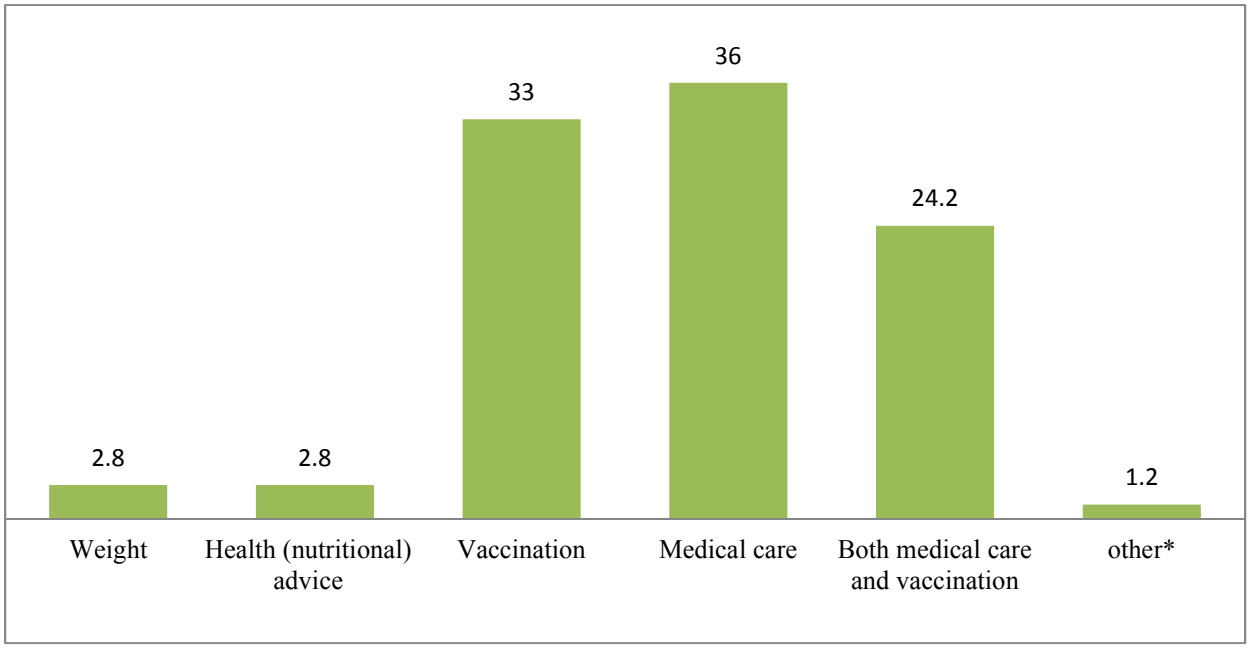
Other*- traditional medicine, community health service by health workers, private clinic, hospital

Regarding the health service that are available for the child in health facility 269(53.1%) of mother mentioned that weight measurement were available and 313(61.5%) mentioned they had received nutritional advice for their child.

Table 4: Availability of specific health service for the child to utilize, Butajira, Ethiopia, 2017 (n=507)

Variable	Availability of services	
	Yes n (%)	No n (%)
Weighting	269 (53.1)	238 (46.9)
Nutritional advice	313 (61.7)	194(38.3)
Immunization	479 (94.5)	28(5.5)
Medical care	455 (89.7)	52(10.3)
Vitamin A supplementation	293 (57.8)	214(42.2)

Participants mentioned their common reason for utilizing health service for their child as to seek medical care 182 (35.97%), vaccination 167(33%) and for both medical and vaccination 123(24.31%).



Other*-vitamin A supplementation, deworming, follow up

Figure3: Mothers most common reason for utilizing health facility for the child, Butajira, Ethiopia, 2017(n=507)

5.3 Mothers Child feeding and growth monitoring knowledge

Participates were asked different question to assess their child feeding knowledge and their ability to read WHO weight-age growth chart for under 2 child. Child feeding and growth monitoring knowledge assessed using different variables like time for early initiation of breast feeding, first thing that the child should take after birth, exclusive breast feeding, continue breast feeding with additional meal, food frequency per day for sick child, ability to read the growth monitoring chart, food frequency based on child age, age to initiation of complementary feeding with different food group.

Out of the 507 surveyed participants, most mothers were able to indicate the recommended age for introducing other foods to the child except meat 277(63.4%). However, more than seventy percent of mothers indicated the correct frequency of the meal based on the child age that the child should get. Almost all of the participants 493(97.2%) stated first thing that the child should take after birth should be mothers breast milk while 14(2.8%) of them mentioned other than breast milk. Close to ninety percent of mothers mentioned early initiation of breast feeding

should be within the first hour of delivery. With regard to exclusive breast feeding 411(81.1%) of them mentioned the child should be feed exclusively for the first six month. Only 106(20.9%) of the mother were able to interpret the growth curve (rising, falling and flatten). Among the participants 296 (58.4%) know regular utilization of GMP has benefit for the child growth. (Table5)

Table 5: Variables used to assess the mother child feeding and growth chart knowledge, Butajira, Ethiopia, 2017 (n=507)

Variable	Response	
	Correct (yes) n (%)	Incorrect (no) n (%)
Frist thing the child should take after birth	493(97.2)	14(2.8)
Early initiation of breast feeding	454(89.6)	53(10.4)
Exclusive breast feeding	411(81.1)	96(18.9)
Continue BF with meal	496(97.8)	11(2.2)
Food frequency/day if the child is sick	219(43.2)	288(56.8)
Food group and recommended age		
Water	406(80.1)	101(19.9)
Fruit	354(69.8)	153(25.4)
Grain	378(74.6)	129(25.4)
Milk	438(86.4)	69(13.6)
Egg	321(63.3)	186(36.7)
Vegetable	282(56.3)	219(43.7)
Meat	160(36.6)	277(63.4)
Meal frequency/day based on child age		
6-8 month child with BF	427(84.2)	80(15.8)
9-23month child with BF	452(89.2)	55(10.9)
6-23 month child without BF	376(74.2)	131(25.8)
Able to read growth chart	106(20.9)	401(79.1)
Regular utilization of GMP	296(58.4)	211(41.6)

As a whole 325 (64%), [95%CI=60%-68%] of the mother had adequate knowledge and 182 (36%), [95% CI=32%-40%] had inadequate knowledge about child feeding and growth monitoring chart.

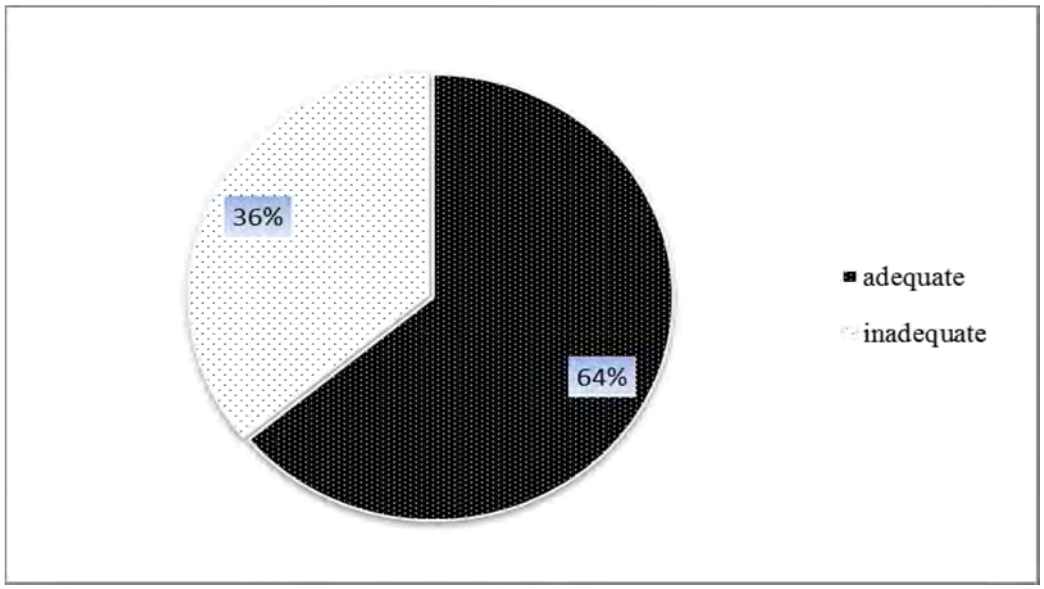


Figure 4: Mothers' child feeding and growth monitoring knowledge, Butajira, Ethiopia, 2017(n=507)

5.4 The relationship between mothers GMP knowledge and other factors

All variables associated at P value < 0.05 were under consideration in the bivariate analysis were also entered to multiple logistic regressions with the dependent variable. Among those variables entered, two of variables (Place of delivery and time taken to reach to nearest health facility) were found to have significant independent associations with the knowledge of the mother at p value<0.05. The remaining variables had no independent effects on the child feeding and growth monitoring knowledge of the mother.

Place of birth was significantly associated with mother knowledge. Mother gave birth at the health facility were 1.60 time more likely to be knowledgeable than those give birth outside the health facility [AOR=1.60; (95% CI=1.06, 2.44)]. Those participants traveled less than one hour to reach to the nearest health facility 2.06 times more likely to be knowledgeable than those travel more than an hour to reach to nearest health facility [AOR=2.06; (95%CI=1.35, 3.13)].

Table 6: Bivariate and multivariable logistic regression analysis of factors associated with mother child feeding and growth chart knowledge, Butajira, Ethiopia, 2017(n=507)

Characteristics	Knowledge		COR(95%CI)	AOR(95%CI)
	Adequate n (%)	Inadequate n (%)		
Place of delivery				
Home	100(56.8)	76(43.2)	1	
Health facility	225(68)	106(32)	1.61(1.11-2.35)*	1.60(1.06-2.44)*
Educational status of the father				
Illiterate	89(56.3)	69(43.7)	1	
Read and write	40(80)	10(20)	3.10 (1.44-6.63)*	2.05(0.92-4.56)
Elementary	127(66.2)	65(33.8)	1.51 (0.98-2.33)	1.25(0.79-1.98)
Secondary and above	68(64.8)	37(20.4)	1.42(0.86-2.37)	1.08(0.62-1.88)
Time taken to reach to nearest health facility				
>one hour	130(54.2)	110(45.8)	1	
<one hour	195(73)	72(27)	1.93(1.29-2.87)*	2.06(1.35-3.13)*
Availability of weight measurement				
No	110(60.44)	128(39.38)	1	
Yes	72(39.56)	197(60.62)	2.35(1.62-3.40)*	1.48(0.93-2.29)
Availability of nutrition advice				
No	100(51.5)	94(48.5)	1	
Yes	225(71.9)	88(28.1)	2.40(1.65-3.49)*	1.33(0.82-2.16)
Availability of Vitamin A supplementation				
No	124(57.9)	90(42.1)	1	
Yes	201(68.1)	92(35.9)	1.59(1.09-2.29)*	1.24(0.79-1.96)

***significant at p <0.05**

5.5 Utilization of growth monitoring and promotion

Key indicators used to assess their utilization in this study included the availability of the family health card, whether it had been plotted or not, if plotted the number of time was taken and the regularity of session was taken. In this study both utilizing the services regularly or irregularly are considered as utilizer.

Data indicated that only 137(27%) has the family health card at the time of data collection. Of the participants only 55(10.9%), [95%CI=8.4%-13.8%], has family health card that had been marked or plotted on weight and age. These are considered as utilizer of the GMP service. Majority of participants 370(72.98%) has no family health card at the time of data collection.

Table 7: Indicators for growth monitoring and promotion utilization of the respondents, Butajira, Ethiopia, 2017(n=507)

Variable		Frequency	Percentage
Currently have Family health card	Yes	137	27
	No	370	73
Utilization with card	Has the card but not recorded	82	16.2
	Has the card and recorded	55	10.8
	Has no card	370	73
Get nutritional advice from health worker	Yes	320	63.1
	No	187	36.9
Source of growth cart information	Health worker	85	80.3
	By myself	12	11.3
	Other mother	9	8.4

Those mothers who had the family health card were asked their reason for not utilizing GMP regularly and mothers mentioned their reason for not regularly utilizing GMP as the child is healthy 20.4% and work load they got 19%.

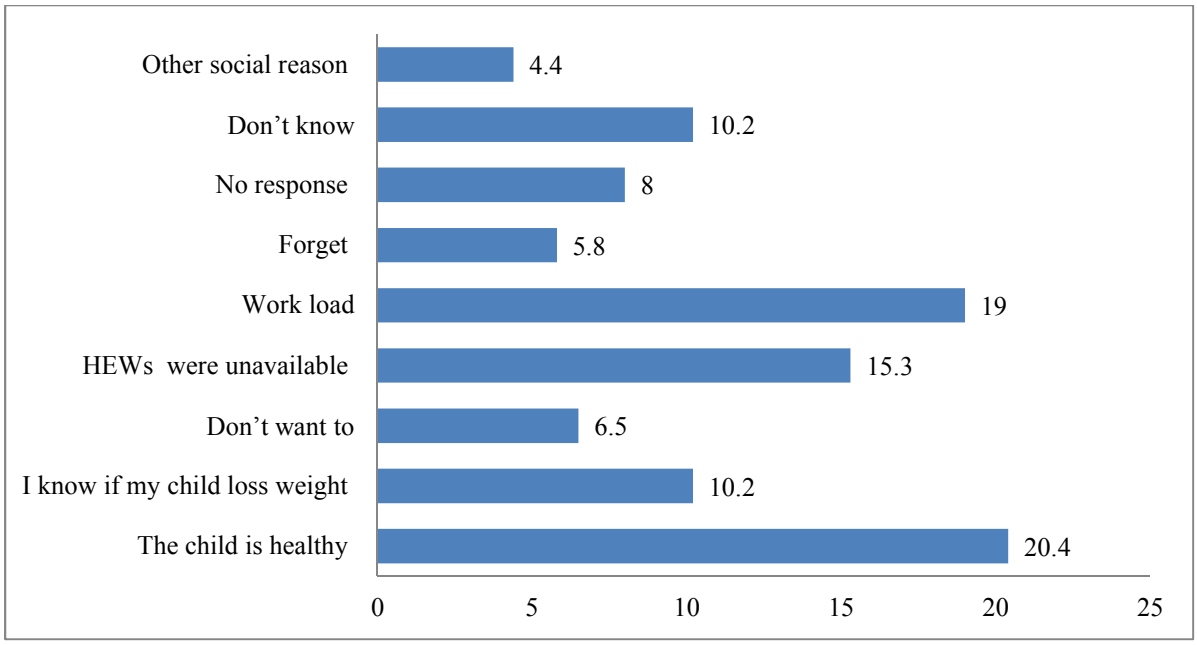


Figure 5: Mothers reason for not utilizing GMP regularly (n=137), Butajira, Ethiopia, 2017

5.6 Relationship between utilization of GMP and other factors

The multivariable logistic regression showed that, mother educational status, mother occupation, availability of weight measurement service and knowledge were significantly associated with utilization of GMP. Mothers with elementary educational level were 3.31 time more likely utilize GMP [AOR=3.31(95%CI=1.50, 6.02)] while mothers with secondary and above education level were 3.33 times more likely utilize GMP than illiterate mothers [AOR=3.33(95%CI=1.30,8.50)]. Regarding occupation of the mother, framers were 4.03 times more likely to utilize GMP than house wives [AOR=4.03(95%CI=1.32, 8.50)]. Mothers with child feeding and growth chart adequate knowledge were about 5 times more likely utilize GMP than those mother with inadequate knowledge [AOR=4.87(95%CI=1.80,13.16)].(Table8)

Table 8: Bivariate and multivariable logistic regression analysis of factors associated with utilization of GMP, Butajira, Ethiopia, 2017 (n=507)

Characteristic	Utilization		COR 95%(CI)	AOR 95%(CI)
	Yes n (%)	No n (%)		
Mother educational status				
Illiterate	13(5.2)	235(94.8)	1	
Read and write	5(16.7)	25(83.3)	3.61(1.19-10.98)*	1.83(0.55-6.02)
Elementary	22(15.2)	123(84.8)	3.23(1.57-6.64)*	3.31(1.50-6.02)*
Secondary and above	15(17.9)	69(82.14)	3.93(1.78-8.66)*	3.33(1.30-8.50)*
Occupation of the mother				
House wife	41(9.4)	394(90.6)	1	
Farmer	10(32.3)	21(67.7)	4.58(2.02-10.38)*	4.03(1.32-8.50)*
Merchant	4(9.8)	37(90.2)	1.20(0.32-4.51)	1.84(0.53-6.36)
Occupation of the father				
Farmer	44(10.8)	363(89.2)	1	
Merchant	3(7.9)	35(92.1)	0.71(0.21-2.39)	0.53(0.14-2.03)
Government employee	6(27.2)	16(72.7)	3.09(1.15-8.32)*	0.86(0.23-3.12)
Other	2(5.4)	35(94.6)	0.47(0.11-2.03)	0.25(0.05-1.24)
Time taken to reach to nearest health facility				
>an hour	17(7.1)	223(92.9)	1	
<an hour	38(14.2)	229(85.8)	2.17(1.19-3.97)*	1.69(0.84-3.42)
Availability of Weighting				
No	8(3.4)	230(96.6)	1	
Yes	47(17.5)	222(82.5)	6.09(2.81-13.17)*	4.65(1.72-12.59)*
Availability of nutrition advice				
No	10(5.2)	184(94.8)	1	
Yes	45(14.4)	268(85.6)	3.09(1.52-6.28)*	0.82(0.32-2.08)
Availability of Vitamin A supplementation				
No	16(7.5)	198(92.5)	1	
Yes	39(13.3)	254(86.7)	1.9(1.03-3.49)*	1.02(0.49-2.17)
Knowledge				
Inadequate	5(2.7)	177(97.3)	1	
Adequate	50(15.4)	275(84.6)	6.44(2.52-16.45)*	4.87(1.80-13.16)*

***significant at p<0.05**

5.8 Qualitative result

Five in depth interviews were conducted with five health extension workers. Non- participatory observation was made to assess the health extension growth monitoring and promotion skill and GMP implementation. It was done in five health post and three growth monitoring sites (outreach). From the five health extension workers participated on the in depth interview two of them didn't give GMP session during the study period (one month). They mention their reason as they got a lot of work to do (work over load). Only three health extension workers were observed while giving the session.

Five of them have eight or above years' work experience. Educational status of all of health extension workers were 10+1. All of the health extension participated in this study has taken training related to growth monitoring and promotion and child nutrition more than 3 or 4 times and still taking the training as refreshment.

In depth interview

Knowledge and Attitude of health extension workers towards growth monitoring and promotion

All of health extension worker participated in this interview stated the purpose of GMP as to prevent malnutrition which can or can't be identified by our naked eye in addition to that to create physically and mentally healthy generation for the future. All of HEWs belief that number of malnourished children has been decreased since GMP program implemented by comparing the current situation from their previous experience. They also think that growth monitoring and promotion is important to create or to make the future generation both mentally and physically healthy and the first two year of life are very important for that.

"…. *Previously I was doing screening of the child status MUAC as house to house campaign a lot of children were found to be under nourished. In addition to that mother took the plum -punt they don't give their child all of it the family member share with the child or sell it to other person. But know the number of under nourished children are very much decreasing may be 3 or 4 children may be identified within 6 month interval."*

The color on the growth chart red (2SD,-2SD), black (3SD,-3SD) and green 0 the coloring on the growth chart makes it easier for HEWs to easily understand. All explain the growth chart by the color of the line on the growth chart as if the child is between the two red lines (between -2SD and 2SD) very well. If it is below the lower red line child growth indicate that the child did not has adequate weight for his/her age.

"*….the child growth is considered to be normal if the weight of the child is between the two red lines. If it is below the lower red line the child is under nourished and above the upper red line over nourished*."

Observation of growth monitoring and promotion session

In health post

Assumption

Ideally, each house hold has its own family folder for health extension package. Each family member (mother, children and father) has their own card that is held in the family folder. The child card includes the full history of the child health status since pregnancy ANC follow up, place of delivery, birth weight, date of birth, basic immunization history, vitamin A supplementation, deworming and growth chart of the child that is expected to be plotted by the health extension work until the child get 5 years old.

The observation include

- The availability of growth monitoring equipment
- The functionality of the equipment
- Availability of guidelines, pamphlets and resource books on GMP program
- Whether the child growth chart held in the family health folder kept by HEWs plotted or not

From the five health posts a total of 65 family folder for health extension package 15 family folder from each health post which holds history of under two children were selected for the observation to check whether the growth chart of the child on the family folder was plotted or not. According to the observation made none of the weight for age growth chart was plotted.

The health extension workers asked why it was not doted or plotted. All of them gave similar answer that they know it should be plotted but because of work load that they had it was not plotted.

In all health posts the type of weight measuring instrument observed was slater scale to measure children above six months and spring balance for children below six months of age.

"….*Growth monitoring mainly focuses on children above six month because the nutritional counseling that I am giving to the care givers focus on complementary feeding so I am not that much focused on weighting children below six month.*"

In one of the health post spring balance used to measure below six month children was not available in the health post whereas in one other health post had measuring instrument but not fully functional. In other three health posts weight measuring instruments were available and fully functional. Regarding, guidelines, pamphlet and book related to child feeding, growth monitoring and child health were available in all of the health posts.

Outreach

Purpose of this observation was to assess the way of GMP session given currently and HEWs skill on growth measurement and growth promotion. A total of 45 observations were made fifteen observations from each growth monitoring site while health extension worker gave GMP session. In one of growth monitoring site children above two years were attending the session and for those children MUAC was taken deworming and vitamin A supplementation were given whereas in this site nutritional education was not given. From the 45 children observed while attending the session 19 were females and 26 of them were males. All of the care givers attending GMP session were females.

List of observation that were included

- Whether the care giver brought the family health card or not
- Weight recorded to the nearest 0.1 kg
- Weight recorded on appropriate chart for sex of child
- Age recorded accurately (count the number of months since birth and records on appropriate place)

- Growth pattern whether the chart is plotted (dots are connected) or not plotted
- If plotted see if it is rising, falling, flattening for two consecutive months
- Health worker tell the caregiver weight of the child, explain the growth pattern of the child, enquire about previous illness and feeding
- The nutritional education given by HEWs

Regarding HEWs weighing technique in all of the site observed before weighting the children weight scale was reset to zero then the child positioned in the center of the hugged bag used to hold the child and the weight was read and referred to growth chart to assess the appropriateness of child growth by the health extension workers and in some of the observation care giver support the HEW specially if the child doesn't stay still. However, HEW did not wait till the child stay still read the weight of the child. From the total observation weight was taken in only (4) 8.9% read to the nearest 0.1kg.

From the total observation made only 4(9%) of the care givers brought the family health card to attend the session and four of the observations were from the same growth monitoring site. Only in this site HEW asked those care givers why they didn't brought family health card to attend the session. Almost all care givers mentioned their reason they forget and they will bring it for the next session.

For caregiver-child pair attending GMP session with family health card the weight was recorded to the nearest 0.1kg in none of them, in four of the observation weight recorded on appropriate chart for sex of the child, weight of the child dotted but the dot weren't connected for all of them. In all of the family health cards missed session were observed. On three of the observations the age were not recorded accurately. Regarding the change in the child growth pattern nothing could be said, whether it is rising, same as the previous month, falling from the previous months of because missed session of last month.

"*…I used to plot the growth chart and tell the care giver of the child to fill the circle according to the nutritional status of the child, half circle if the weight decrease full increase and this help the mother to understand more clearly the growth of her child.*"

Explanation about the growth pattern of the child was given in none for none of the care giver who brought the family health card.

Health extension work tells the exact weight of the child in 14 (31%) of the total observation. Only 3(6.7%) of care givers were enquired by HEW about the health and feeding history of the child. Almost 96% of the cases health extension praises care giver because the child nutritional status was found to be above the lower red line on the growth chart. However, from the total observation two care givers were told to bring the child to the health post on the next day because children were coughing repeatedly while their weight were measured and also HEW was enquiring the care giver when the cough started. One of the child weight and age as referred to growth chart was below the red line HEW blamed the care giver that this is her fault and this is due to the child was not feed adequately then told the care giver to bring the child to health post on the next day. Most of the weight measurement lasts within 2-4 minute per child.

From the three growth monitoring sites in one of the site nutritional education was not given to care givers. On the other two health sites general nutritional counseling was given after the anthropometric measurement of all attended children.

Nutritional education mainly focuses on complementary feeding particularly on procedure of preparing porridge that the care giver should give the child by mixing 2 hand grains and 3 hand cereals. Regarding the thickness of the porridge shouldn't be very thin or thick rather should be in between. Child should be feed at least 2-3 times a day. HEW mentioned that care giver should give a variety of food like cereal, egg, milk and milk products(butter), green leafy vegetables, fruit (avocado, papaya, banana) this should be given for children six month and above.

"*…I don't ask the mother what she is feeding her child If the child has inadequate nutritional status on public because she may be ashamed to tell on public what she is feeding her child. I ask the detail while giving house to house visit. I ask her what she is feeding the child, how, way of preparation, frequency of the meal. After identifying the cause then counseling will be given for the mother*."

In addition the care giver should wash hand and materials she is using to cook and feed her child before and after the child fed. Care givers with below six month children were not observed attending the sessions on three of the observed sites. No counseling given by HEW about exclusive breast feeding.

Challenge

- Work over load

All of the health extension workers mentioned that GMP sessions had irregularity or missed session will be missed because of the work load that they got. Some of them don't have schedule for the session do it when ever got time with in the month. Some has the schedule to give the session.

"…..*am the only HEW working in this health post I have a lot of work that I am expected to do there is health extension package and other service i give to community in health post and by house to house visit and frequent meeting with wereda health officers all this expected from me. I sometimes do over report .working alone is difficult for me*."

- Recording

Health extension workers could plot the growth chart that they held by them. They know that it needs to be plotted but taking this whole family folder to the health site every month is very difficult and time consuming.

"I don't take the family folder to GM site it is difficult for me to take this whole folder and plot the growth chart."

According to HEWs all mothers with child below two year had the family card but mothers were not bringing the family folder to attend GMP session.

"….*most of the mothers don't bring the family card with them even if they brought I may forget to dot or plot on the growth chart of the child."*

- Mother belief

HEWs mentioned that some of the mothers are not welling to utilize the service because of wrong belief. Some say my child is healthy and fat why he/she would need to be measured. Other say what difference does it make whether my child get measured or not. Others don't want to be seen by other people they call it "yesewu ayen" evil eye and don't want their child to be sick due to this evil eye.

- Health extension workers gap on understanding the aim and skill on while giving growth monitoring and promotion session.

6. DISCUSSION

This mixed cross sectional study aimed to assess the knowledge and utilization of growth monitoring, factor associated with it among under two children. While the skill and knowledge of health extension workers were assessed by in depth interview and observation. The finding revealed that utilization was significantly associated with education status of the mother, availability of weight measurement service for the child and mother's child feeding and growth monitoring knowledge. Whereas the mother's child feeding and growth monitoring knowledge was significantly associated with time taken to reach to the nearest health facility and place of delivery.

Among mothers' participated in this study 64% of mothers had adequate child feeding and growth monitoring knowledge. This is lower than a study done in Nigeria to assess mothers' child feeding knowledge 73.3% of them were knowledgeable (32). But, a study done in Ghana reported lower (32%) magnitude than this study (31).The difference could be due to the fact that the items included in Nigerian and Ghana study to assess knowledge might be different from the current study. Other qualitative study done in Nigeria stated that majority of mother believe that child below 2 year should not be feed with meat (33). This is similar with this study which is more than half of the participants 63.4% gave incorrect answer regarding age that the child should be feed meat. From the result of observation the nutritional education given by HEWs focus on grain, cereal and vegetable, egg food groups this might be attribute to mother knowledge on age to start feeding meat to the child.

Place of delivery and time taken to reach to the nearest health facility were found to be predictor of mother child feeding and growth monitoring knowledge. This study indicate those mothers gave birth in health facility were more likely to be knowledgeable than mother gave birth at home. The possible explanation for this is for those mothers gave birth in health facility had opportunity to get child feeding counseling through clinical based nutrition intervention like essential nutrition action from health workers.

Those mothers traveled less than an hour get to the nearest health facility from their home had higher knowledge than those travel more than one hour to get to the nearest health facility. This is attributed to as the distance from health facility decreases the chance of getting health and nutritional advice also increases. According to the result of this study most of mothers' utilize

health post for their child and as the time to reach to health facility from their home health extension worker might visit frequently the house to give nutritional and health education.

This study found that utilization of GMP was 11% which is lower than the study finding from Rwanda 76% (20) and this might be due to the difference on the study design. Our study used cross sectional design whereas the study from Rwanda used cohort design and the cohort includes children with GMP exposure. The other institution based study done in Ghana (31) 26% of children had missed one or more GMP session. Ghana study considers institution based and this study is a community based study. A study done in Kenya (12) found a higher proportion 53.3% than our study which can be explained by the difference in population. The done in Kenya considered already identified utilizers of GMP while this study considers all children below two years of the study area.

UNICEF define Growth monitoring is a process of following the growth of a child compared with a standard by periodic, frequent anthropometric measurements and assessments. The main purpose of GM is to assess growth adequacy and identify faltering at early stages before the child reaches the status of under nutrition (5). According to UNCIEF(13) and WHO (34)growth monitoring manual health workers are expected to plot the growth chart the age and weight of the child accurately and GMP session should be given every month regularly till the child gets two. Growth monitoring of young children is recognized as an effective means of detecting growth faltering early, providing a critical opportunity for taking the preventive or curative actions needed (5). The health extension worker mentioned that mother didn't come to get GMP unless they are told by HEWs however there is no fixed day for this session. Some of the mother's belief that if their child weighted repeatedly the child may got sick because of evil eye "yesewu ayen" and they expected to get some direct benefit in exchange for attending GMP session. Other qualitative study done in Tigray also mentioned that mothers wrong belief, giving priority to other work than attending GMP session, and HEW poor skill while taking measurement were the challenge for GMP utilization (14). There was a gap on understanding the aim of the GMP on health extension worker that were participated on this study.

From the observation result of this study, some of the health posts didn't even have the weight measuring instrument. Growth monitoring and promotion is expected to be given since the birth of the child but in one of the health post had no weight measuring instrument for children below

six month or spring weight. The procedures of GMP session were different in different health (growth monitoring) site. The result from outreach observation also suggested that care givers with below six month child were not observed attending the session. In some of growth monitoring site general nutritional education were given and in other not given at all. Improving care giver child feeding knowledge is one of the main aims of GMP and this is addressed by giving nutritional counseling according to the result nutritional education was poor. In addition to that the session has irregularity, growth chart was not plotted and care givers were not bringing family health card while attending GMP session. If the charts are not plotted it is impossible to know how well the child is growing. Even if the HEW mentioned that they have received enough training that supported them to effectively implement GMP program. The observations indicate that there is gap on their performance.

According to the 2016 Ethiopian Demographic and Health Survey (EDHS) report, the prevalence of stunting was 38%, underweight 24%, and wasting 10% (9) which is still high. However, the government of Ethiopian is working on zero stunting in children less than 2 by 2030 (35). By filling the gap and working on GMP could be help full to improve nutritional status of children and mother knowledge on child feeding.

This study found that mother educational status and mother occupation were found to be predictors of utilization. The finding of this study indicated that both mother with elementary and secondary and above level of education were three times more likely utilize GMP than illiterate mothers. A similar finding was reported from Kenya (12) which reported mothers with college level of education more likely utilize GMP than illiterates. This may be attributed to mother with formal education get the chance to utilize health service in addition to GMP than uneducated. Educated mothers can easily understand the benefit of utilizing GMP and other health service than uneducated mother. However, the study conducted in Ghana (23) didn't show that mother education level as influencing GMP utilization.

This study found that occupation of the mother was other determinant factor in that farmers utilize GMP more likely than house wives. GMP is one component of the community nutrition intervention and this session is given in the community under big tree farmer mother may had the opportunity to see other child-mother pair utilizing the service while farming and took their child

to attend the session. House wife mothers spend most of their time in the house and may not be exposed to this information.

Immunization was predictor of GMP in other studies Ghana (23) Kenya (12). However, this study showed that immunization was not associated with utilization of GMP this might due to different on provision of GMP in the area considered by our study. In Kenya and Ghana GMP is given in health facility and given while mother child pair visit health facility to get immunization where as in Ethiopia it is community based it is not given with immunization.

Mothers' child feeding and growth chart knowledge was also predictor of GMP utilization. Mother who had adequate knowledge of child feeding and growth chart more likely utilizes GMP than mother who had inadequate knowledge. This finding is similar with study done in Kenya (12), Ghana (31). This can be explained by mother with adequate child feeding knowledge and able to understand the information displayed on the growth chart get eager to utilize or attend GMP session.

Regarding health service characteristic availability of weight measurement service for child in the health facility was significantly associated with utilization of GMP. Mothers who mentioned the availability of weight measurement service in the health facility more likely utilize GMP than those mothers' who mentioned unavailability of weight measurement service in health facility. The finding from qualitative showed that GMP utilization can also influenced by knowledge and skill of service provider. GMP sessions were not given regularly and appropriately due to work load the health extension had, not recording the weight and age of the child on the growth chart and mother wrong belief also other challenges that affect the utilization of GMP.

HEWs were measuring weight and referred it to assess the adequacy of the current child growth not to assess the growth pattern of the child. However, Child anthropometric measurements for assessing nutritional status are not considered as GM or GMP. When GM information is not used to inform the education and promotion element of an intervention then it is not GMP both the monitoring of growth and using that growth information in counseling are essential to GMP (6).

Measurement errors were made by the HEW like weight was not read to the nearest 0.1 kg (34, 36) and there were inaccuracy on recording the age on the growth chart. Regarding nutritional education given to care givers, it was not child growth based rather general nutritional education

on complementary feeding. The growth pattern was not explained since there was recording problem. Other similar study in Guatemala (37) revealed that the Counseling was found to be very weak. If the weight information is registered by HEWs it was not used to classify growth of the child, explain the mother the situation found, provide counseling and make a commitment with her about what the mother has to do (33). Among the observed three growth monitoring sites in this study in one of the GM site nutritional education was not given at all. Other similar study done in South Africa from the total observed 13 growth monitoring sites on 6 of the site nutritional education was not given at all (38). This could be due to mothers didn't want to stay for the nutrition education that is given after anthropometric measurement and immunizing children attending GM session. All of the observed care givers were female but the Federal Democratic Republic of Ethiopia Ministry of Health Family Health Card fathers should participate on growth monitoring session (39) but no male care givers were observed in this study.

7. STRENGTH AND LIMITATION

The strength of this study is using both qualitative and quantitative methods increases the validity of the data and helped to assess the utilization and implementation of growth monitoring and promotion from both mother and health extension workers side. Using simple random sampling method to select the study participants minimizes the selection bias.

There is a limitation that to this study that needs to be acknowledge. There may also be a recall bias while assessing the child feeding and growth chart knowledge of the mothers.

8. CONCLUSION

More than half of the respondents had adequate child feeding growth chart knowledge however utilization of GMP is very low in Butajira. Higher educational status, farmer occupation category and mothers with adequate child feeding and growth chart knowledge were associated with higher odds of GMP utilization. Whereas distance from the nearest health facility and place of birth were associated with higher odds of having adequate child feeding and growth chart knowledge. Growth monitoring and promotion is not implemented as it was supposed and the quality of the service is also questionable. The main reason for this is mothers' wrong belief mothers that their child is healthy based on their criteria and know the child weight using their criteria, not plotting the growth pattern of the child on the growth chart, work load both the health extensions and mothers had, health extension workers skill gap on taking weight measurement.

9. RECOMMENDATIONS

The following recommendations are forwarded for the concerned bodies based on the findings of the study;

For program managers of public health and nutrition:

- Monitoring implementation of growth monitoring and promotion should be needed throughout different weredas and kebeles that are expected to implement growth monitoring and promotion program.
- Improving the quality of growth monitoring and promotion implementation to decrease the gap on the health extension workers weight measurement procedure and counseling skill.
- Motivating and monitoring health extension works to give growth monitoring session regularly.

For non-governmental organization and supervisors:

- Evaluate the effectiveness of the training that is given for health extension workers to improve the quality of growth monitoring and promotion.

For health extension workers:

- Advocacy regarding growth monitoring and promotion should be done to change the outlook of mothers towards growth monitoring.

For researchers:

- Further studies should be done on factors that are associated with mother's attitudes towards growth monitoring and promotion.
- Study that could assess father's contribution towards growth monitoring and promotion utilization.

REFERENCE

1. F. James Levinson and Lucy Bassett, Malnutrition Is Still a Major Contributor to Child Deaths, 2007, Population Reference Bureau ,www.prb.org.

2. Robert E Black, Lindsay H Allen and Zulfiqar A Bhutta Maternal and Child Under nutrition lancet 1,2008, www.thelancet.com.

3. World health organization, growth monitoring and promotion, 2003.

4. Valérie Marchand, Promoting optimal monitoring of child growth in Canada: Using the new World Health Organization growth charts, 2010.

5. United Nation Child Fund, Recommendations from a Technical Consultation UNICEF Headquarters Experts' consultation on growth monitoring and promotion strategies: Program guidance for a way forward, New York, USA, 2008.

6. Ann Ashworth, Roger Shrimpton and Kazi Jamil, Growth monitoring and promotion: review of evidence of impact, Review Article, 2008.

7. Marcia Griffiths and Joy Del Rosso, Growth Monitoring and the Promotion of healthy young child growth, 2007.

8. Nuné Mangasarian, Growth Monitoring and Promotion: Intervention or Platform for Action? 35th SCN Session WG Breastfeeding and Complementary Feeding

9. Central Statistical Agency, Ethiopian Demographic and Health Survey, 2016.

10. African Union Commission, World Food Programme and United Nations Economic Commission for Africa, The Cost of HUNGER in Ethiopia, The Social and Economic Impact of Child Under nutrition in Ethiopia Summary Report, 2012.

11. Gerardo Weisstaub,Magdalena Araya, Ann Hill, and Ricardo Uauy, Childhood Malnutrition: Prevention and Control at the National Level, 2008.

12. Jane Ilusa Nyabuti, Factors assiociated with the continuation of growth monitoring among children 10 to 59 months old in nyamira county, Kenya, 2010.

13. Mangasaryan. N, Arabi. M, and Schultink. W, Revisiting the concept of growth monitoring and its possible role in communitybased programmes, Summary of review, 2011. http://www.foodandnutritionbulletin.org/

14. Selamawit M. Bilal, Albine Moser, Roman Blanco, Mark Spigt and Geert Jan Dinant, Practices and Challenges of Growth Monitoring and Promotion in Ethiopia, 2014.

15. Government of the federal democratic republic of Ethiopia, national nutrition programme, 2016- 2020.

16. Environmental Burden of Disease Series, No. 12,

17. Lucy Bassett and Julie Ruel-Bergeron, Promoting Healthy Child Growth and Development: Advances and Opportunities for Community based Nutrition Programs in Central America, May 2012.

18. D. Roberfroid, P. Kolsteren, T. Hoere ´e and B. Maire, Do growth monitoring and promotion programs answer the performance criteria of a screening program? A critical analysis based on a systematic review, 2005.

19. Convention on the Rights of the Child Adopted and opened for signature, ratification and accession byGeneral Assembly resolution 44/25 of 20 November 1989 entry into force 2 September 1990, in accordance with article 49.

20. Jdd Ngirabega, W. Leonard, C. Munyanshongore, M. Dramaix- Wilmet utilization of community based growth monitoring services by eligible children in rural Rwanda, Rwanda Medical Journal, 2010.

21. Dominique Roberfroid, Pierre Lefèvre, Tom Hoerée, and Patrick Kolsteren, Perceptions of Growth Monitoring and Promotion among an International Panel of District Medical Officers, September 2005.

22. Olugbenga-Bello Adenike I & Asekun-Olarinmoye Esther O,Primary Health Care Workers' Role in Monitoring Children's Growth and Development in Nigeria,West Africa,2011.

23. Sandra Gyampoh , Assessment of clinic-based growth monitoring and promotion in the Accra metropolitan area of Ghana, 2012.

24. Mebratu Tarekegn, Knowledge attitude and practice of health extension workers towards growth monitoring and promotion program in Tigray region, Ethiopia, 2014.

25. A.S. Oyekale and T.O. Oyekale, do mothers' educational levels matter in child malnutrition and health outcomes in Gambia and Niger? 2000.

26. Paulus D Sahanggamu , Lupi Purnomosari , Drupadi Dillon , Information exposure and growth monitoring favour child nutrition in rural Indonesia, doi : 10.6133/apj cn.012016.09, January 2016.

27. Mahama Saaka, Relationship between Mothers' Nutritional Knowledge in Childcare Practices and the Growth of Children Living in Impoverished Rural Communities, J HEALTH POPUL NUTR 2014 Jun;32(2):237-248

28. T. S. Haripin , S. Albiner , L. Zulhaidah and A. Evawany, Improving Mothers' Knowledge and Child Calorie Intake through Modified Growth Chart in Deli Serdang District, Indonesia, ISSN 2028-9324 Vol. 12 No. 1 Jul. 2015, pp. 252-265, http://www.ijias.issr-journals.org/.

29. Central statistics agency, Ethiopian demographic and health survey, 2011.

30. Yemane Berhane and Peter Byass , Butajira DSS Ethiopia, Department of Community Health, faculty of Medicine Addis Ababa University and department of public health and clinical medicine Umeå University , Indepth Monograph: Volume 1 Part C.

31. Sandra Gyampoh, Gloria Ethel Otoo and Richmond Nii Okai Aryeetey, Child feeding knowledge and practices among women participating in growth monitoring and promotion in Accra, Ghana, BMC Pregnancy and Childbirth 2014,14:180.

32. Sanusi , Leshi, Agada, Mother's knowledge and practice of breastfeeding and complementary feeding in Enugu State, Nigeria, 2016.

33. Christopher .N. Ngwu, Knowledge of Infant Nutrition among Mothers in Enugu State, South Eastern, Nigeria: Implications for Social work Practice, 2014.

34. World health organization Child Growth Standards, Growth velocity based on weight, length and head circumference Methods and development, World Health Organization 2009, Department of Nutrition for Health and Development

35. Federal Democratic Republic of Ethiopia Ministry of Health, seqota declaration implementation Plan 2016 – 2030

36. World health organization, Child Growth Standards Training Course on Child Growth Assessment Version 1, November 2006.

37. United States Agency for International Development, Evaluation of the Growth Monitoring and Promotion Component of the Integrated Care for Children and Women at the Community Level, Gutamala, 2008

38. Faber M, Schoeman S, Smuts CM,PhD and Adams V Evaluation of community-based growth monitoring in rural districts of the Eastern Cape and KwaZulu-Natal provinces of South Africa, 2009.

39. Federal Democratic Republic of Ethiopia Ministry of Health Family Health Card, Key Actions to Improving Family Health, 2008.

Annexes

Annex 1: Informed Consent and/or Ascent Form (English version)

Addis Ababa University, School of public health

My name is …….. I am here on behalf of Luwam Desalegn student of Addis Ababa University School of public health. She is conducting a research on' **Knowledge and utilization of growth monitoring and promotion for under two children'**. In Butajira, for the partial fulfillment of master's in public health in Addis Ababa school of public health. She received permission from Addis Ababa university school of public health and the district health office administrators to conduct this study.

The aim of this study is to assess knowledge and utilization of growth monitoring and factor affecting it. The study will help in providing a base line data for policy makers and other researchers on issues regarding growth monitoring and promotion. It can also have a role in helping you to practice the recommended child feeding practice for proper nutritional care of your child.

You are selected randomly to participate in this study because you are a mother with a child age less than 2 years old. Your participation is purely based on your willingness. You have full right either to participate or decline to be a participant in this study. If you choose to take part in the study you may respond to all the questions or you may not answer questions you don't want to, and have the right to stop the interview at any time. You also have the right to choose not to take part in this study. Participating in this study will not have any risk or harm. Whether you are willing to participate, refuse or decide to withdraw later, you will not be subjected to any ill treatment.

If you agree to participate in the study, you will be asked to answer some questions about yourself, your child growth and feeding knowledge and your growth monitoring and promotion service utilization. The interview lasts with you will take about 15 minutes.

Any information that you provide will be kept confidential, names will not be written or specified and all the questionnaires will be coded for anonymity. No one will have access to the non-coded data except the principal investigator. Only the principal investigator will know the details and she will discard it after completing analysis. The data will not be used for purposes other than the study. Your willingness and active participation is very important for the success of this study. Contact details of principal investigator and the person to whom to contact at any time for further explanation.

Name of principal investigator: Luwam Desalegn
Cell phone No - 0913658795
E-mail: luwamdesalegn@gmail.com

INFORMED CONSENT

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time. I understand that I will still get the same medical care whether I decide to leave the study or not and my decision will not change the care I will receive from medical centers.

Respondent agree to participate?

YES ☐ No ☐

1. If yes, continue the interview

2. If no, skip to the next participant by writing reasons for her refusal.

Informed consent Certified by

Relation of the respondent to the child_____

Respondent's signature/thumb print_____ Date _____

Interviewer: Name _____ Signature _____

Questionnaire ID number _____

Date of interview _____ Time started _____ Time completed_____

Result of interview:

1. Completed

2. Respondent not available

3. Refused

4. Partially completed

Checked by: Supervisor: Name _____ Signature_____

Annex 2: Sample English questionnaire

Survey questionnaire to assess utilization of growth monitoring and promotion and child feeding and growth chart knowledge

Questionnaire No_____ Kebele name _____

House number_____

Part 1-child bio data			
S.no	Questions	Response	Skip
101	Sex of the child	1. male 2. female	
102	Date of birth of the child		
103	Child age in month		
104	Place of delivery	1.home → 106 2.health facility	
105	Mode of delivery	1. Viginal delivery 2. Cesarean section	
106	How many times had the child received the basic immunization? (NB-see at the immunization card if available if not ask the mother recall)		
Part 2: Socio demographic and economy of the house hold			
s.no	Questions	Response	Skip
201	Age of the mother in completed year?		
202	What is your religion?	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Others(specify)_____	
203	What is your ethnicity?	1. Guragie 2. Oromo 3. Amhara	

		4. Tigre 5. Silte 6. Others(specify)_____	
204	Level of education	1. Illiterate 2. Read and write 3. Primary 4. Secondary and above 5. Other(specify)_____	
205	What do you do for a living?(occupational status) NB. more than one answer is possible	1. House wife 2. Farmer 3. Merchant 4. Government employee 5. Private employee 6. Student 7. Others(specify)_____	
206	What is your current marital status?	1. Married 2. Single 3. Divorced 4. Widowed	
207	What is the educational status of your husband?	1. Illiterate 2. Read and write 3. Primary 4. Secondary and above 5. other (specify)_____	
208	What is the occupation of your husband?	1. Farmer 2. Merchant 3. Government employee 4. Private employee 5. Daily laborer 6. Student 7. Others(specify)_____	
209	House hold average monthly income	_____birr	
210	Source of water supply	1. Piped water 2. Bore hole 3. Unprotected well 4. Protected spring 5. river	

		6. other (specify _____	
211	How long does it take to go there, get water and comeback?	_____hour	
212	Do you have toilet your own toilet?	1.yes 2.no	
213	Do you have access to media?	1. yes → 214 2. No	
214	Which one of the following media does your family use?	1. Radio 2. Television 3. Newspaper 4. internet 5. Others (specify_____	
215	Source of energy to cook	1. Electric 2. Solar 3. Kerosene 4. wood 5. dry leaf 6. animal dung 7. other (specify _____	
216	Main material of the roof?	1. Grass and wood 2. Corrugated iron/metal 3. Cement 4. blocks 5. Other(specify_____	
217	Main material of the floor?	1. Sand 2. Wood 3. Cement 4. Marble 5.Other (specify_____	
218	Main material of the walls?	1. Wood with mud 2. Wood with grass	

		3. Blocks 4. Cement with stone 5. Bricks 6. Corrugated iron/metal 7.Other(specify_____	
219	Which one of the following found in your house?		
	Electricity? A watch/ clock? A radio? A television? A mobile telephone? A refrigerator? A table? A chair? A bed with cotton/sponge/spring mattress? An electric mitad? kerosene lamp/pressure lamp?	Yes No Electricity?.....1 2 A watch/ clock ?.....1 2 A radio?.....1 2 A television?.....1 2 A mobile telephone?.....1 2 A refrigerator ?.....1 2 A table ?.....1 2 A chair ?.....1 2 A bed with cotton/sponge/spring mattress?.....1 2 An electric mitad.....1 2 A kerosene lamp/pressure lamp?.....1 2	
220	Does your house have window?	1. Yes 2. No	
221	Does any member of this household own any agricultural land?	1.Yes → 223 2.No	
222	How many (local units) of agricultural land do members of this household own?	_____local unit	
223	Which of the following your family own		
	Milk cows or oxen? Horses, donkeys or mules? Goats or sheep? Chickens?	Yes No Milk cows or oxen……1 2 Horses or donkeys……1 2 Goats or sheep……1 2	

	Beehives?	Chickens……..1 2 Beehives……...1 2	
Part 3: Mother child feeding knowledge			
S.no	Questions	Response	Skip
301	Have ever receive advice from health worker	1.yes 2.no	
302	The first thing the child should get after birth	1. water 2. breast milk 3. formula milk 4. other(specify _____	
303	Time to early initiation of breast feeding after delivery should be		
304	For how long should child breast fed without any additional fluid and food		
305	For how long should child breast fed with additional fluid and food		
	Instruction: Ask the care giver at what age the child should start eating the listed food groups		
	Food group	**Age the child should start**	
306	Water/other liquids		
307	Bread and cereals		
308	Fruits		
309	Dairy products (milk, cheese, yoghurt etc)		
310	Eggs		
311	Green leafy vegetable		
312	Meats (chicken, fish, meat…)		
	Ask the care giver the appropriate feeding frequency		
313	No. of meals/day for 6-8 month old breastfeeding child		

314	No. of meals/day for 9-23 month old breastfeeding child		
315	No. of meals/day for 6-23 month old non-breastfed child		
316	Frequency of meal per day for sick child should be	1. increase the frequency of the meal from the previous 2. decrease the frequency of the meal from the previous 3. the same as the frequency of the meal from the previous	
Part 4: Maternal WHO weight for age growth chart knowledge			
s.no	Questions	Answer	Skip
401	Do you know that taking your baby weigh regularly has benefit for your child?	1.yes → 2. no	
402	If yes, what is the benefit	1.to monitor the child growth 2.to seek for medical care 3. to know the health status of the child 4.other (specify)_____	
403	Do you have the health card of the family NB- ask the mother to show you the family card	1.yes 2.no →	407
404	Number of months attended from birth of child (refer to health card)	_____month	
405	Number of months missed from birth of child (refer to health card)		
406	If any months were missed, what were the barriers to your attendance?		
Use the sample growth charts provided as illustrations to assess the caregiver's comprehension from the questions below			
407	Can you read the information displayed on the growth chart	1. yes 2. no →	501
408	Who thought you?	1. Health worker 2 By myself	

		3. Other mother 4. Other(specify_____	
409	What does it mean for a child when the curve on the growth chart is flattening?	1.Child is not growing well/has not gained enough weight 2.Child maybe sick/has been sick 3. Child is not eating well 4. Don't know 5. Other (specify_____	
410	What does it mean for a child when the curve on the growth chart is rising?	1.Child is growing well/has gained enough weight 2.Child is healthy 3.Child is eating well 4.Don't know 5.Other (specify_____	
411	What does it mean for a child when the curve on the growth chart is falling?	1.Child is not gaining weight from the previous growth monitoring and promotion session 2.Child maybe sick/has been sick 3. Child is not eating well 4. Don't know 5. Other (specify_____	
Part 5: Availability and accessibility of health services			
s.no	Question	Response	Skip
501	Is there health facilities available around your home	1. Yes 2. No	
502	How far is the nearby health institution from your house? (In terms of hours it takes to reach on foot)	……hour ……minutes	
503	For what services do you usually take your children to the health facility?	1. weighting 2. nutrition advice 3. Immunization 4. Treatment of diseases 5. Vitamin A supplementation 6. Others(specify_____	
504	Where do you get health service for your child usually?	1.health center 2.health post 3.private clinic 4.other (specify_____	
505	Is growth monitoring and promotion service available for	1.yes 2. no	

	your child?		
506	What type of service offered in health facility?		
		Yes No	
	Weighing	Weighing…….1 2	
	Nutrition counseling/education	Nutrition advice……..1 2	
	Immunization	Immunization …….1 2	
	Treatment of diseases	Treatment of diseases……..1 2	
	vitamin A supplementation	vitamin A supplementation…..1 2	

Annex 3: Informed Consent and/or Ascent Form for In Depth Interview (English version)

Health institution – Health post

Code of the health post _____

My name is Luwam Desalegne and I am carrying out a survey to assess knowledge and utilization of growth monitoring and promotion for under five age children on different health centers and health post to find ways of improving the service. I would like to talk to you about your experiences on growth monitoring and promotion service.

The interview should take less than an hour. I will be taping the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because we're on tape, please be sure to speak up so that we don't miss your comments.

All responses will be kept confidential. This means that your interview responses will only be shared with research team members and we will ensure that any information we include in our report does not identify you as the respondent. Remember, you don't have to talk about anything you don't want to and you may end the interview at any time.

I would like to ask you some questions to get information from your experience. Please be sure that this discussion is strictly secreted, confidential and that your name is not being recorded.

Are there any questions about what I have just explained?

Are you willing to participate in this interview?

May I continue?

Yes	No
☐	☐

Thank you!

Annex 4: Sample checklists for in-depth interview (English version)

Code of the service provider_____
Sex _____ Age _____ marital status_____
Educational status_____

1. How long have you been working in health post? _____
2. For how many years have you been providing growth monitoring and promotion ____
3. What kind of training have you ever attended? /on Job training/
4. Do you think that the training you have received in GMP is adequate to perform your duties?
5. What is growth monitoring and promotion?
6. What is the purpose of the growth chart and do you think it's important?
7. What does it mean for a child when the curve on the growth chart is falling?
8. There are no wrong or right answers. All comments, both positive and negative to the point of discussion are welcomed.
9. Do you think GMP is preventing malnutrition?
10. What does it mean for a child when the curve on the growth chart is falling and what measure do you take?
11. What does it mean for a child when the curve on the growth chart is flattening and what measure do you take?
12. How is growth monitoring and promotion is implemented you?
13. What are the challenges for its implementation?

Annex 5: Sample check list for observation of growth monitoring and promotion

This checklist is adapted from other similar study and modified by the researcher for the purpose of this study to monitor the availability of GMP service, to assess knowledge and skill of the health workers at the health post level and create an overall GMP performance score based upon findings.

Health Post Information Panel	
Kebele :	Name of monitor:
Health post:	Number of HEWs at HP:
Date of supervision:_____ Time of supervision started:_____ Ended:_____	Total under-2 attending GMP session:
Total under-2 population in the kebele getting the service:	

A) Availability of GMP service

(Please indicate the particular action taken by the health worker after weighing and charting the child's weight by indicating √ for yes and x for no)

S.no	Description	Yes	No	Remark
1	Availability of growth monitoring equipment			
2	Check functionalities 1.fully functional 2.partially functional 3. not functional			
3	Availability of Guidelines, Pamphlets and resource Books on GMP program			
4	Under 2 Growth Monitoring done properly according to the WHO standard			
5	How long does GMP takes			

(B) Growth promotion action taken by health worker				
	Action	Yes	No	Remark
7	Health worker tells caregiver weight of child			
8	Health worker explains growth pattern of child using the growth chart			
9	Health worker enquires about previous illness			
10	Health worker enquires about feeding			
11	Health worker praises caregiver			
12	Health worker counsels caregiver(record details in section			
13	Health worker refers child to medical/ nutrition Centre			

(*C) Growth Pattern of child (Please refer to child's growth chart and record details of the growth curve as indicated below)*				
	Growth pattern	Yes	No	Remark
14	Rising			
15	Falling once/ same as previous month			
16	Falling two consecutive months			
17	Flattening or same for two consecutive months			

(D) Recording and Charting of growth chart (Please refer to child's growth chart and record details of the growth curve as indicated below)				
	Procedure	Yes	No	Remark
18	Weight recorded to			

	nearest 0.1kg			
19	Weight recorded on appropriate chart for sex of child			
20	Weight charted properly (dots connected)			
21	Age recorded accurately (counts the number of months since birth and records in appropriate place)			
(*E) Nutrition Counseling given to caregiver (Please indicate yes=1 in the relevant section if a particular counsel is given and no=0 if it is not)*				
	Nutritional counseling	Yes	No	Remark
22	**Counseling for mothers with infants 0-5 months old**			
A	Encourages exclusive breastfeeding			
B	Explains the importance of breastfeeding			
C	Teaches breastfeeding technique			
D	Advices feeding on demand			
E	Educates on expressing breast milk			
F	Counsels and encourages good hygiene practices			
G	Encourages mother to ask questions and answers them			
23	**Counseling for mothers with children**			

	6-23 months old			
A	Encourages complementary feeding			
B	Encourages frequent feeding in a day (please indicate below if the number of times is indicated)			
C	1-2 times for breastfed infants 6–8 months			
D	3-4 times for breastfed children 9–23 months			
E	4 times for non-breastfed children 6–23 months			
F	Counsels mother to generally feed a variety of foods			
24	Counsels caregiver to specifically feed:			
A	Cereals (foods prepared from rice, millet, maize etc)			
B	Roots and tubers(foods prepared from potato, carrot etc)			
C	Legumes and nuts (beans,pea, groundnut etc)			
D	Flesh foods (meat, chicken, fish and liver/organ meats)			

E	Eggs			
F	Dairy foods eg. Vitamin-A rich fruits and vegetables (dark green vegetables, carrots, mangoes, palm nut)			
G	Other fruits and vegetables			
25	Encourages continued breastfeeding in addition to complementary foods			
26	Counsels and encourages hygiene practices			
27	Vitamin A supplementation			
28	Iron supplementation			
29	Encourages mother to ask questions and answers them			

Note:-Detail notes of review and observation will be taken

Annex 6: Informed Consent and/or Ascent form (Amharic version)

አዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ፋኩልቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የተጠያቂው / መላሾች የመረጃ ቅፅ

ጤና ይስጥልኝ እንደምን ነዎት

ስሜ.....ይባላል፡፡የመጣሁት በአዲስ አበባ ዩኒቨርስቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል ተማሪ የሆነችውን ልዋም ደሳለኝን ወክዬ ነው፡፡ከሁለት አመት በታች ያሉ ህፃናት ክብደት አለካክ ና የህፃናት አመጋገብን በተመለከተ (የህፃናትዕድገትክትትልናየማነልበት)
ምን ያህል ተጠቃሚ እናቶች እንዳሉ ና ያላቸውን የግንዛቤ መጠን ለማወቅ በቡታጅራ በሚ ገኙ እናቶች ላይ ጥናት እያደረገች ሲሆን ከአዲስ አበባ ዩኒቨርስቲ፣ ከቡታጅራ ወረዳ ጤና ቢሮ ፈቃድ አግኝታለች፡፡

የጥናቱ ዓላማ እናቶች ምን ያህል ከሁለት ዓመ ት በታች ለሆኑ ህፃናት በየወሩ ስለሚ ደረገ ው የክብደት መለካትና ስለህፃናት አመጋገብ ምን ያህል ያውቃሉ?ምን ያህልስ እየተጠቀሙ በት ነው (የህፃናት ዕድገት ክትትልናየማነልበት)?ይህ ጥናት ፖሊሲ አውጪዎችና የሚመለከታቸው አካላት ሕፃናት በምግብ እጥረት እንዳይጎዱ የመከላከያና መቆጣጠርያ መንገዶችን እንዲቀርፁና እንዲተገብሩ እንደ መነሻ ሀሳብ ይሆናል የሚል ፅኑ እምነት አለን፡፡

እርስዎ በዚህ ጥናት ላይ እንዲሳተፉ የተመረጡት በዘፈቀደ/በኢጋጣሚ የናሙና አወሳሰድ ስልት መሰረት ነው። የእርስዎ ተሳትፎ ሙሉ በሙሉ በእርስዎ ሙሉ ፍቃደኝነት ላይ የተመሰረተ ነው፡፡በጥናቱ ላይ ያለመሳተፍ ሙሉ መብት አለዎት፡፡ ለመሳተፍ ፈቃደኛ ከሆኑ በኋላም በፈለጉት ጊዜ ማቆም ወይም ማቋረጥ ይችላሉ፡፡ በጥናቱ ባለመሳተፎ የሚደርስቦት ምንም አይነት ችግር አይኖርም፡፡

በጥናቱ ለመሳተፍ ከተስማሙ የተወሰኑ ጥያቄዎችን እንጠይቆታለን፡፡ በዚህ መጠይቅ ስለ ሕፃናት አመጋገብ ና ሕፃናት ስለ የእድገት ሠንጠረዥ 2 ዓመት በታች ለሆኑ ሕፃናት እድገት ክትትልና ማነልበት ግንዛቤ እና አጠቃቀም ሁኔታዎች የተመለከቱ ጥያቄዎች እጠይቅዎታለሁ፡፡ በመጠይቁ ጊዜ ጥሩ ስሜት ካልተሰማዎት በማንኛውም ጊዜ አቋርጠው መሄድ ይችላሉ፡፡ መጠይቁ 20 ደቂቃ ይህል ይፈጃል።

በመጨረሻም ከእርስዎ የምንሰበስበው መረጃ ከስምዎ ጋር አይያያዝም፡፡ ስምዎት እንደማይጠቀስና ለማንም አካል አልፎ እንደማይሰጥ ልናረጋግጥ እንወዳለን፡፡ የዚህ ጥናት ውጤት ግን ተጠርዞ እና ተዘጋጅቶ ለሚመለከታቸው የጤና ድርጅቶች ወይም ለሌሎች አካላት ሊሰጥ ይችላል፡፡

ለተጨማሪ ማብራሪያ የዋና አጥኚውን አድራሻ ይጠቀሙ

ስም፡ ልዋም ደሳለኝ
ኢሜይል: luwamdesalegn@gmail.com
ስልክ: 0913658795

የስምምነት መጠየቂያ/ማረጋገጫ ቅፅ

ከላይ በሰጠዎት መረጃ መሰረት በጥናቱ ላይ ለመሳተፍ ፍቃደኛ ነዎት?

1. አዎ

2. አይደለሁም

ፍቃደኛ ካልሆኑ ምክኒያቱን ፅፈው ወደሚቀጥለው ተሳታፊ እለፉ ……

……

የተሳታፊውዝምድ ና ለህጻኑ_____

የተሳታፊዉ ፊርማ_____

የመረጃ ሰብሳቢ
ስም…… ፊርማ…….
የመጠይቁ ቁጥር……..
መጠይቁ የተካሄደበት ቀን……የተጀመረበት ሰአት…….ያለቀበት ሰአት…….

የቃለ መጠይቁ ውጤት
1. ሙሉ በሙሉ የተሞላ
2. በከፊል የተሞላ
3. ምንም ያልተሞላ

በተቆጣጣሪዎች ተረጋግጧል፡ ስም……..ፊርማ……..

Annex 7፡Survey questionnaires (Amharic version)

በአዲስ አበባ ዩኒቨርስቲ ህክምና ፋክልቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል ከሁለት አመት በታች ያሉ ህፃናት ክብደት አለካክ ና የህፃናት አመጋገብን በተመለከተ (የህፃናት ዕድገት ክትትል ና የማጎልበት) ምን ያህል ተጠቃሚ እናቶች እንዳሉ ና ያላቸውን የግንዛቤ መጠን በተመለከተ

የጥናታዊ መረጃ መሰብሰቢያ መጠይቅ

የመጠይቁ ቁጥር _____ቀበሌ_____ የቤት ቁጥር_____

ክፍል1-ሕፃኑን በተመለከተ መረጃ			
ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
101	የሕፃኑ ፆታ	1. ወንድ 2. ሴት	
102	ሕፃኑ የተወለደበት ቀን		
103	የሕፃኑ እድሜ (በወር)		
104	ሕፃኑ የተወለደበት ቦታ	1.በቤት ዉስጥ → 106 2.በጤና ተቋም	
105	በምን አይነት ሁኔታ	3. በምጥ 4. በቀዶ (ጥገና) ህክምና	
106	ለምን ያህል ጊዜ ተከተበ/ች ?		
ክፍል2- የሕፃኑን እናት በተመለከተ አጠቃላይ መረጃ			
ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
201	የእናትየዉ ዕድሜ		
202	ሐይማኖትህ/ሽ ምንድነው?	፡. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላካለ(ይጠቀስ_____	
203	ብሔርሽ ምንድን ነው?	1.ጉራጌ 2. ኦሮሞ 3. አማራ 4.ትግሬ 5.ስልጤ 6.ሌላ (ይጠቀስ_____	

204	የትምህርት ደረጃሽ?	1. ያልተማረ(ማንበብና መፃፍ የማይችል) 2. መጻፍ ና ማንበብ 3. 1ኛ ደረጃ 4. 2ኛ ደረጃ 5. ሞያና ቴክኒክ 6. ሌላ(ይጠቀስ)_____	
205	ሥራሽ ምንድን ነው?	1. የቤት ዕመቤት 2. ገበሬ 3. ነጋዴ 4. የመንግስት ስራ 5. የግል ስራ 6. ተማሪ 7. ሌላ(ይጠቀስ_____	
206	የጋብቻ ሁኔታ	1. ያገባ 2. ያላገባ 3. የተፋታች 4. ባሏ የሞተባት	
207	የባለቤትዎ የትምህርት ደረጃ?	1. ያልተማረ(ማንበብና መፃፍ የማይችል) 2. መጻፍ ና ማንበብ 3. 1ኛ ደረጃ 4. 2ኛ ደረጃ 5. ሞያና ቴክኒክ 6. ሌላ(ይጠቀስ)_____	
208	ባለቤትዎ ሥራው ምንድን ነው?	1. ገበሬ 2. ነጋዴ 3. የመንግሥት ስራ 4. የግል ስራ 5. ቀን ሠራተኛ 6. ተማሪ 7. ሌላ(ይጠቀስ_____	
209	የወር ገቢዎ ምን ያህል ነው?(በብር)		
210	የውሃ አቅርቦት ምንጩ	1. የቧንቧውሃ 2. የጉድጓድውሃ 3. ወራጅ ውሃ 4. የምንጭ ውሃ 5. ወንዝ 6. ሌላ(ካለ ይጠቀስ_____	
211	ዉሃ ቀድተሽ ለመመለስ ምን ያህል ሰአት/ደቂቃ ይወስድብሻል?		
212	ቤተሰብዎ የራሱ የሆነ መጸዳጃ ቤት አለዉ?	1.አለ 2.የለም	
213	በቤት ውስጥ የሚድያ(መገናኛ ብዙሃን) አለ?	1. አለ	

		2. የለም → 215	
214	በቤት ውስጥ እንደ መረጃ ምንጭነት የምትጠቀሙት የቱን ነው?	1. ሬድዮ 2. ቴሌቪዥን 3. ጋዜጣ 4. ኢንተርኔት 5. ሌላ(ካለይጠቀስ_____	
215	ምግብ ለማብሰል የምትጠቀሙት የኃይል ምንጭ	ነ. ኤሌክትሪክ 2. በፀሐይ 3. በጋዝ 4. እንጨት 5. ቅጠል /የደረቀሣር/ 6. ሠጋቱራ 7. ሌላ ካለ(ይጠቀስ_____	
216	የሚኖሩበት ቤት ጣሪያ የተሰራዉ ከምንድነው?	1. የተፈጥሮ ቁስ (ለምሳሌ ሳር ወይም እንጨት) 2. ቆርቆሮ 3. ግንብ 4. ሸክላ 5. ሌላ ካለ ይገለፅ _____	
217	የሚኖሩበት ቤት ወለል የተሰራዉ ከምንድነው?	1. አፈር 2. ከእንጨት 3. ከሲሚንቶ 4. ከእምነበረድ 5. ሌላ (ይገለፅ _____	
218	የሚኖሩበት ቤት ግድግዳ የተሰራዉ ከምንድነው?	ነ. ከጭቃ ና ከእንጨት 2. ከሳር ና ከእንጨት 3. ከብሎኬት 4. ከድንጋይ ና ከሲሚንቶ 5. ከሸክላ 6. ቆርቆሮ 7. ሌላ ካለ ይገለፅ _____	
219	ከሚከተሉት የትኛው በቤትዎ ይገኛል?		
		አለ የለም	

	ኤሌክትሪክ? ቴሌቪዥን ? ራዲዮ/ቴፕ? ሞባይል/ተንቀሳቃሽ ስልክ? የቤት (የመስመር) ስልክ? ማቀዝቀዣ (ፍሪጅ) ? ጠረጴዛ? ወንበር? የስፖንጅ ፍራሽ? የኤሌክትሪክ ምድጃ (ስቶቭ)? ቡታ ጋዝ?	ኤሌክትሪክ……. 1 2 ቴሌቪዥን……. 1 2 ራዲዮ/ቴፕ……1 2 ሞባይል/ተንቀሳቃሽ ስልክ ……1 2 የቤት (የመስመር) ስልክ……1 2 ማቀዝቀዣ (ፍሪጅ)……..1 2 ጠረጴዛ……..1 2 ወንበር……..1 2 የስፖንጅ ፍራሽ……..1 2 የኤሌክትሪክ ምድጃ (ስቶቭ) …….1 2 ቡታ ጋዝ……...1 2	
220	ቤትዎ መስኮት አለው?	1. አለ 2. የለም	
221	የእርሻ መሬት አላቹ?	ነ. አለ 2. የለም ⟶	223
222	የእርሻ መሬታቹ ስፋቱ ምን ያህላል?	_____ጥማድ	
223	ቤተሰብዎ ከሚከተሉት ዉስጥ የየትኛዉ የቤት እንስሳት ባለቤት ነዉ?		
	ላም ወይም በሬ ፈረስ፣ አ ህ ያ ወይም በቅሎ በ ግ ወይም ፍየል ዶ ሮ ወይም ጫጩት የንብ ቀፎ	አለ የለ ም ላም ወይም በሬ ..... 1 2 ፈረስ፣ አ ህ ያ ወይም በቅሎ..... ነ 2 በ ግ ወይም ፍየል …….. 1 2 ዶ ሮ ወይም ጫጩት …….. 1 2 የንብ ቀፎ …….. 1 2	

ክፍል 3- እናቶች የሕፃናት ተገቢ የሆነ አመጋገብ በተመለከተ ያላቸዉ ግንዛቤ

ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
301	ልጅ እንደተወለደ መጀመሪያ ላይ መዉሰድ ያለበት	ነ. ዉሃ 2. የእናት ጡት ወተት 3. የድቄት ወተት 4. ሌላ ይጠቀስ_____	
302	ልጅ እንደተወለደ መጀመሪያ በምን ያህል ጊዜ ውስጥ ጡት መጥባት መጀመር አለበት?		
303	ልጅ ከተወለደ በኋላ ለምን ያህል ጊዜ የእናቱን ጡት ብቻ ተጨማሪ ምግብ /መጠጥ ሳይወስድ መጥባት አለበት?		
304	ተጨማሪ ምግብስ እየተመገበ ለምን ያህል ጊዜ		

	ጡት መጥባት አለበት?		
	የምግብ ዓይነት	**ሕፃኑ መመገብ (መዉሰድ) መጀመር ያለበት ዕድሜ**	
305	ውሃ /ሌላ ፈሳሽ		
306	ጥራጥሬ ፣ዳቦ፣እንጀራ፣ ሩዝ፣ ወይም ሌሎች		
307	ፍራፍሬ፣(ፖፖያ፣ማንጎ፣ ሙዝ)		
308	የወተት ተዋፅዎች(የላም ወተት ወዘተ..)		
309	እንቁላል		
310	አትክልት ፣ጎመን ፣ቆስጣ		
311	ሥጋ (ዶሮ፣የበር ስ ጋ ወዘተ…)		
	ሕፃናት በቀን ምን ያህል ጊዜ መመገብ አለበት	***መመገብ ያለባቸው ጊዜ/በቀን***	
312	ከ6-8 ወር ሕፃን ጡት የሚጠባ ከሆነ በቀን ምን ያህል ጊዜ *መመገብ* አለበት		
313	ከ9-23 ወር ሕፃን ጡት የሚጠባ ከሆነ በቀን ምን ያህል ጊዜ *መመገብ* አለበት		
314	ከ6-23 ወር ሕፃን እና ጡት የማይጠባ ከሆነ በቀን ምን ያህል ጊዜ *መመገብ* አለበት		
315	ልጅ በሚያመዉ(የህመም ስምት በሚሰማዉ) ወቅት በቀን ምን ያህል ጊዜ *መመገብ* አለበት	1. ከበፊቱ *መ*ጨመር 2. ከበፊቱ *መ*ቀነስ 3.እንደበፊቱ *መ*ቀጠል	

ክፍል 4 - ስለ ሕፃናት ክብደት መለካት ና አመጋገብ(እድገት ክትትልና ማነልበት) ግንዛቤ እና በአገልግሎቱ ያለው አጠቃቀም

ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
401	ህፃ ኑ የጤ ና ካርድ አለዉ ?	1.አለ 2.የለም →	405
402	ልጁ ከተወለደ ለምን ያህል ወራት ክ ብደቱ ተለክቱዋል? (የጤና ካርዱን ይመከቱ)	_____ወር	
403	ልጁ ከተወለደ ለምን ያህል ወራት አገልግሎቱ ተቋርጧል?(የጤና ካርዱን ይመከቱ)		
404	ከተቋረጠ ለምን ተቋረጠ?		
405	ልጅሽ በየወሩ በቋሚነት ክብደቱ መለካቱ ጠቃሚ እንደሆነ ታዉቂለሽ ?	1.አዎ 2.አይደለም →	406

406	አዎ ካሉ ምን ጥቅሙ ምን ነበር?	1.የልጁን ክብደት ናእድገትሁኔታለመቆጣጠር 2. ልጇ ጤነኛ መሆኑን ለማወቅ 3.አስፈላጊውንየህክምናዕርዳታለማግኘት 4.ልጇ ጤነኛ መሆኑንና አለመሆኑን ለማወቅ 5.ሌላ(ይጠቀስ_____	
ከዚህ በታች ላሉት ጥያቄዎች የህጻናትን የእድገት መከታተያ ሠንጠረዥ ይጠቀሙ(እየተመለከቱ መልሱን ይሙሉ)			
407	የሕፃናት እድገት ሠንጠረዥ ማንበብ ትችያለሽ (መረዳት ትችያለሽ)?	5. አዎ 6. አልችልም ⟶	501
408	ማን ነው ያስተማረሽ?	2. የጤና ባለሙያ 3 በራሴ አንብቤ 7. ከሌላ እናት 8. ሌላ(ይጠቀስ_____	
409	የእድገት ሠንጠረዡ ላይ ያለው መስመር ዝቅ እያለ ከመጣ ምን ያሳያል?	1. በቂ የሆነ ክብደት እንደሌለ 2. ሕፃኑ ጤናማ አለመሆን 3. በአግባቡ እየተመገበ አለመሆኑን 4. አላውቅም 5. ሌላ(ይጠቀስ_____	
410	የእድገት ሠንጠረዡ ላይ ያለው መ ስመር ተመሳሳይ እያለ ከመ ጣ ምን ያሳያል?	1. ክብደት እየጨመረ እንደሆነ 2. ሕፃኑ ጤነኛ መሆኑን 3. ሕፃኑ በአግባቡ እየተመገበ መሆኑን 4. አላውቅም 5. ሌላ(ይጠቀስ_____	
411	የእድገት ሠንጠረዡ ላይ ያለው መ ስመር ከፍ ከሆነ ምን ያሳያል?	1. ክብደት አለመጨመሩን 2. ሕፃኑ ጤነኛ አለመሆኑን 3. ሕፃኑ በአግባቡ እየተመገበ አለመሆኑን 4. አላውቅም 5. ሌላ(ይጠቀስ_____	
ክፍል 5- የጤ ና አገልግሎት ሁኔታ በተመለከተ			
ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
501	በመኖሪያ ቤት በአቅራቢያችሁ የጤና ተቋም አለ?	1. አዎ 2. የለም	
502	በእግር ምን ያህል ያስኬዳል?	……. ሰአት …….ደቂቃ	
503	አብዛኛውን ጊዜ ልጅሽን ለምንድነው ወደ ጤና ተቋም የምትወስጂው?	1. ክብደት ለማስለካት 2. ከጤና ባለሙያ የህፃናት አመጋገብን በተመ ለከተ ም ክር ለማ ግኘት 3. ለክትባት	

		4. ሲታመም ለማሳከም 5. ቫይታሚን ኤ (ጠብታ) ለማግኘት 6. ሌላ(ይገለፅ_____	
504	አብዛኛዉን ጊዜ ለህጻኑ የጤና አገልግሎት የምታገኚዉ የት ነዉ?	1. ጤናጣቢያ 2. ጤና ኬላ 3. የግል ክሊኒክ 4. ሌላ(ይጠቀስ_____	
505	የሕፃናት እድገት ክትትልና ማነልበት አገልለገሎቱ ታገኛላሽ ለህጻኑ?	1. አዎ 2. የለም	
506	በጤና ተቋም ዉስጥ የሚገኙ አገለግሎቶች		
	ክብደት መለካት የልጅሽ እንዴት መመገብ እንዳለብሽ ምክር/ ትምህርት ክትባት የህክምና አገልግሎት ፕለንፒነት/ዱቄት/ወተት ቫይታሚን ኤ (ጠብታ) ክትባት (በየ6 ወር የሚሰት ክትባት)	አዎ የለም ክብደት መለካት..... 1 2 የልጅሽ እንዴት መመገብ እንዳለብሽ ምክር/ትምህርት..... 1 2 ክትባት..... 1 2 የህክምና አገልግሎት..... 1 2 ፕለንፒነት/ዱቄት/ወተት..... 1 2 ቫይታሚን ኤ (ጠብታ) ክትባት (በየ6 ወር የሚሰት ክትባት) 1 2	

Annex 8: Informed Consent and/or Ascent Form for In Depth Interview (English version)

ጤና ይስጥልኝ?

ስሜ ልዋም ደሳለኝ ይባላል፡፡ ከሁለት ዓመት በታች የሆኑ የህፃናት ልኬት እና ህፃናት ያላቸውን አመጋገብ እናቶች ምን ያህል ያውቃሉ?ምን ያህል እየተጠቀሙበት ነው?በሚለው ላይ ጥናትእየሠራሁነው ፡፡ አንቺን ደግሞ በዚህ በህፃናት ልኬት ላይ ያለሽን ልምድ ልጠይቅሽ ነው?ቃለ መጠየቅ ላረግልሽነው? ስለትብብርሽ በቅድሚያ አመሰግናለሁ፡፡

ቃለ መጠየቁ ከአንድ ሰዓት በላይ አይፈጅም፡፡ የምንነጋገራቸውን ነገሮች ምንም ሳይቀር ለመያዝ እንዲያስችለኝ ድምፁን እቀዳዋለሁ፡፡ አልፎ አልፎም ማስታወሻ እይዛለሁ፡፡ቃለ መጠየቁ ከእኔ ና ካአንቺ ውጭ ሌላ ማንም ዘንድ እንደማይደርስ ላረጋግጥልሽ እፈልጋለሁ፡፡ በዚህ ጥናት ውጤት ላይም ማንነትሽ አይገለፅም፡፡ ማቋረጥ በፈለግሽበት በማንኛውም ሰዓት ማቆም እንችላለን፡፡

ጥያቄ አለሽ?

በጥናቱ ላይ ለመሣተፍ ፈቃደኛ ነሽ?

አዎ	አይደለሁም
☐	☐

Annex 9: Sample checklists for in-depth interview (Amharic version)

የመጠይቁ ቁጥር……

ዕድሜሽ ……

የጋብቻ ሁኔታ……

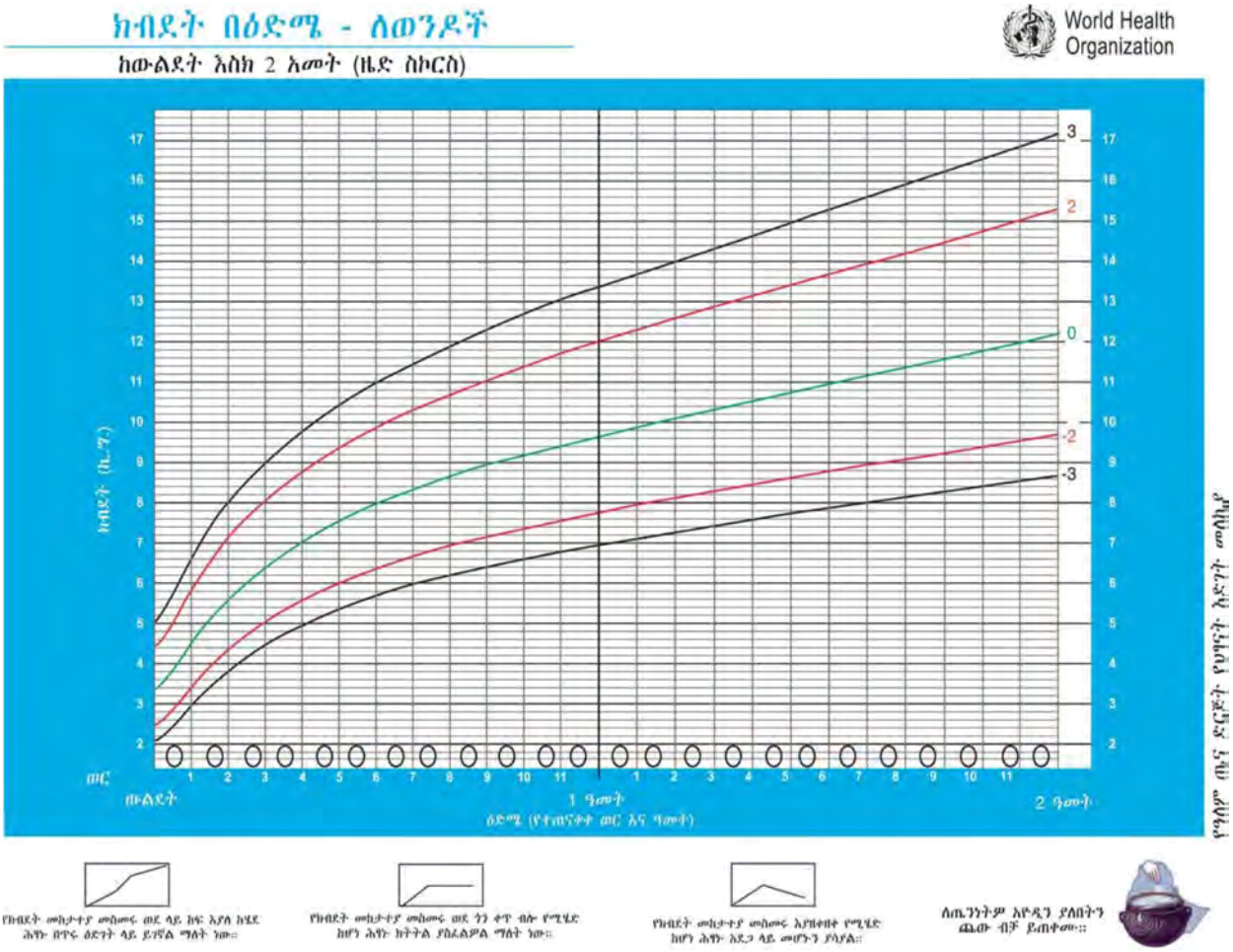
ዖታ……..

የትምህርት ደረጃ……

1. ለምን ያህል ጊዜ ሰርተሽል? (የሥራ ልምድሽ)
2. የህፃናት ልኬት ላይ ምን ያህል ሰርተሻል?
3. የህፃናት እድገት ማነልበት ና ክትትል ምንድን ነዉ?አላማዉስ ምንድን ነው?
4. እናቶች ፍቃደኛ ናቸዉ ልጆቻቸዉን በየወሩ ለማስለካት
5. የሰንጠረዡ አላማ
6. አገልግሎቱን እንዴት እንደምሰጪ አስለጂኝ?
7. መቼ ነዉ አገልግሎቱን የምሰቺዉ?
8. ስንት ስልጠናዎችን ወስደሻል የህፃናት እድገት ማነልበት ና ክትትል?
9. የህፃናት ልኬትን በተመለከተ ያገኘሽው ስልጠና በቂ ነው ብለሽ ታስቢያለሽ ሥራውን ለመሥራት?
10. የህፃናት ልኬት አላማ ምንድን ነው?
11. በህፃናት ላይ የሚከሰተውን የምግብ እጥረትን ይከላከላል ብለሽ ታስቢያለሽ?
12. ትክክል ና ትክክል ያልሆነ መልስ የለም፣ (አሉታዊም፣ አዎንታዊም) አስተያየት ለመስጠት ነፃ ሁኚ።
13. የህፃናት ዕድገት/ክብደት መለኪያ መቆጣጠሪያ ካርድ ሞልተሽ ታውቂያለሽ?
14. መስመሩ ከፍ አለ ማለት ምን ማለት ነው? ምንስ ታደርጊያለሽ?መስመሩ ዝቅ አለ ማለት ምን ማለት ነው?ምንስ ታደርጊያለሽ?
15. መስመሩ ከፍም ዝቅም ካላለ ምን ማለት ነው?ምንስ ታደርጊያለሽ?
16. የእናቶች የህፃናት አመጋገብን በተመለከተ የምክር አገልግሎት እንዴት ና ምንን መሠረት በማድረግ ነው?
17. ይህን በምሠሪበት ወቅት ምንስ ችግሮች ገጥመውሻል?

    ከ6 ወር በታች ላሉ ህፃናት የሚሠጠው የሥነምግብ (የአመጋገብ) ምክር ምን ይመስላል ከ6-8 ወርስ? ከ9-23 ወር? ከ2-5 ዓመት ላሉትስ?

Annex 10 WHO growth monitoring chart



Annex 11: curriculum vitae

Principal investigator's curriculum vitae

Personal information

- Name: Luwam Desalegne
- Address: Mob : +251913658795
- Email: luwamdesalegn@gmail.com
- P.O.Box 2447 A.A Ethiopia

- Date of Birth: April 15,1991
- Sex: Female
- Marital Status: Single
- Nationality: Ethiopian

Educational background

- Graduated from Jigjiga University June, 2013 GC.

- Holding BSc in Public Health

-Years attended from October 2009 to July 2013 GC.

- Secondary School

-Bole Meserete Hiwot Secondary School (Addis Ababa)

-Years attended from 2005 to 2009 G.C

Professional Experience

- From December 2013 – March 2014: in adult and under five OPD in Tenta Health

Center, Tenta Worda ,South Wollo Zone Amhara Region, Ethiopia.

Skills

- Interpersonal communication skill and team leading ability
- Data collection, analysis and report writing.
- Have Proficiency in verbal and written English and also Amharic

Languages

- Able to write, read, speak and listen Amharic and English