

**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF HEALTH SCIENCES**  
**SCHOOL OF NURSING AND MIDWIFERY**  
**POSTGRADUATE PROGRAM**

**Caregiver's Knowledge and Utilization of Growth Monitoring and  
Promotion for under two years children in Debre Berhan, Ethiopia,  
2020.**

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## APPROVAL OF THE EXAMINERS BOARD

This thesis, by Fuad Ahmed is accepted in its present form by the examiners board as fulfilling for the degree of master's in pediatric and child health nursing

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## **ABBREVIATIONS /ACRONYMS**

<b>AOR</b>	Adjusted Odds Ratio
<b>CBGMP</b>	Community Based Growth Monitoring and Promotion
<b>CI</b>	Confidence Interval
<b>COR</b>	Crude Odds Ratio
<b>DDS</b>	Demographic Surveillance System
<b>EDHS</b>	Ethiopian Demographic Health Survey
<b>EMDHS</b>	Ethiopian mini Demographic Health Survey
<b>ETB</b>	Ethiopian Birr
<b>FHC</b>	Family Health Card
<b>GC</b>	Growth Chart
<b>GM</b>	Growth Monitoring
<b>GMP</b>	Growth Monitoring and Promotion
<b>HEW</b>	Health Extension Worker
<b>HHs</b>	House Holds
<b>K</b>	Kebele
<b>MOH</b>	Ministry of Health
<b>MS</b>	Micro Soft
<b>MUAC</b>	Mid Upper Arm Circumference
<b>NGO's</b>	Non-Governmental Organizations
<b>UNICEF</b>	United Nations International Children Emergency Fund
<b>SD</b>	Standard Deviation

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## ABSTRACT

**Background:** Growth monitoring and promotion is a prevention activity comprised of growth monitoring, linked with promotion that increases awareness about child growth and serves as the core activity in an integrated child health and nutrition program. Even though growth monitoring and promotion would appear to be a prerequisite for a good child health, several studies have shown that there is a “know-do gap” among caregivers.

**Objective** This study was aimed to assess caregiver’s knowledge and utilization of Growth monitoring and promotion services for children under two years old in Debre Berhan, Ethiopia 2020.

**Method** Community based cross sectional study supplemented with qualitative design was conducted in Debre Berhan from February- May2020. Quantitative and qualitative methods were used. For quantitative part, from the 421 estimated sample size 402caregivers were selected by using a single population proportion formula with simple random sampling and data was collected using adopted, structured and pretested interviewer administered questionnaire. For qualitative 6 purposively selected health extension workers were interviewed (in depth interview) to supplement the quantitative study to find out the challenges. Quantitative data was entered into Epi data version 4.0.2 then exported to a Statistical Package for Social Sciences version 21.0for analysis. Bivariate and multivariable logistic regressions were computed to see the association of independent with the dependent variables. The results were reported as Odds Ratio and 95% Confidence interval. Qualitative data was analyzed using thematic analysis.

**Result** with 402(95.4%) response rate, only 35% of the care givers were found to have adequate knowledge about GMP while utilization of GMP services was 13.4%.Illiterate caregivers were 3 times less likely to know about Growth monitoring and promotion than those with secondary or above level of education [AOR=3.54; (95% CI=1.22, 10.72)].Caregivers who didn’t get an explanation about the weight status of their child were 5 times less likely to have adequate knowledge about Growth monitoring and promotion than their counterparts [AOR=5.02; (95% CI=2.626, 9.597)].Additionally, those who said there was no nutritional counseling and education sessions at the health facility were 2.4 times less likely to be knowledgeable about Growth monitoring and promotion than those that attended the session [AOR=2,4; (95%

CI=1.356, 4.359)]. Residents at rural area were more likely to utilize growth monitoring and promotion than urban area [AOR=0.128; (95% CI=0.035, 0.474)]. The odds of young child age group (0-5 and 6-11month) not to utilize Growth monitoring and promotion were lower by 87.7% and 80.7% respectively compared to the 18-23 months of age [AOR=0.123 and 0.193;(95% CI=0.029, 0.517 and 0.049,0.764)]. Children's with more than 5 family members were 3 times less likely to utilize Growth monitoring and promotion than those with less[AOR=2.97; (95% CI =1.171,7.536)].The odds of not utilizing the service were lower by 94% for those who travel less than an hour to reach the health facility [AOR=0.06 ; (95% CI=0.014,0.261)]. Care givers with poor knowledge were 2.4 times more likely not to utilize Growth monitoring and promotion than those who had good knowledge [AOR= 2.45 ;( 95% CI=1.125-5.332)].Qualitatively, workload, lack of materials, lack of training and supervision were among the major challenges faced by health extension workers.

**Conclusion and recommendation** Both Knowledge and utilization of Growth monitoring and promotion were low. Thus, efforts should be made to deliver supportive supervision, trainings and materials to health posts. Additionally, promotional campaigns must be initiated to create awareness in both the rural and urban side of the city.

**Keywords** Caregiver, Growth monitoring, Children, Knowledge, Utilization, Ethiopia

# 1. INTRODUCTION

## 1.1 Background

Children's survival, growth and development depend upon a good nutrition, while the hopes and future of children is robbed by malnutrition which leaves their lives' hanging by the balance. From birth to adulthood proper growth and function of all body parts and systems are fueled by Nutrients. Without nutrients, normal growth and development of children will be impaired. Malnutrition occurs when there is inadequate amounts of nutrients (proteins, calories, carbohydrates, fats, minerals, and vitamins) that are important in keeping the body systems in normal functioning manner (1,2).

Poor nutrition particularly in early childhood results in stunting. Stunting prevents children from ever achieving their full possible height and restrains their brain development inhibiting it to develop to maximum cognitive potential. As a result, children whose growth is stunted face barriers and challenges in school and their communities. Poor nutrition also leads to wasting, which threatens the life of children by making them more susceptible to chronic developmental delays and poor immunity that increases the risk of morbidity and mortality, especially when wasting is severe and not treated early (1).

Growth Monitoring and Promotion (GMP) is a process which involves a regular weighing and measuring of height to compare the results with standard normal values. It is used in numerous community-based programs to monitor the status of growth in children and to decide whether or not to deliver additional interventions. However, some doubts are being raised about the effectiveness in programs built on Community based Growth Monitoring (CBGM). CBGMP is basically done by scheduled visits to the health provider and was started in communities with low access to primary healthcare. Ideally the services were expected to be linked to and aided by the nearest available health facilities in order to ensure quality monitoring service by the community worker. Basically GMP is aimed at making child growth visible and to promote actions to address growth faltering (3).

Majority of the countries in the world promote and monitor growth and in addition to that 125 countries had adopted the WHO standards for growth chart, implicating GMP particularly of infants and young children as a widely regarded necessary element of primary health care (4).

Assessing growth is considered to be a prominent instrument for defining the nutritional status of a particular individual or a population. If there is any impairment in the health condition or nutritional status in a person, it almost always affects growth regardless of their cause. The purpose of GMP is to reduce the risk of malnutrition by improving nutrition, educating caregiver's and produce early detection and referral for conditions manifested by growth disorders (5).

Neglecting to react and address malnutrition will continue to produce a significant loss of both human and economic potential for nations. Because of this governmental and non-governmental organizations in Ethiopia are implementing prevention and promotion programs in order to minimize malnutrition, especially in children. One of these programs is growth monitoring and promotion (GMP) which improves nutritional status of children by initiating health extension programs at community level .GMP is a prevention activity that expands knowledge about child growth; increases child caring practices; builds additional interest for other health services, as needed; and serves as the core activity in an incorporated child health and nourishment programs (6,7).

## **1.2 Statement of the problem**

The World Health Organization views poor nutrition as one of the most important threats to the world's health. When a child is undernourished, the negative consequences follow that child for his/her entire life (6,8). The Latin America, The Caribbean, Asia and all the other regions has shown a decrement of number of stunting except for Africa, Africa is the only region where the number of stunted children has risen instead of declining further more east Africa is the most affected by stunting compared to other parts of Africa (1). According to the 2019 Ethiopian Mini Demographic Health survey (EMDHS), 37% of under five children in Ethiopia are short for their age or stunted, and 12% are severely stunted. The prevalence of wasting is 7% and 21% are underweight (9).

Even though crucial interventions to combat malnutrition are well known, they need to be more integrated and increased in order to have a big impact in the nutritional status of children in developing countries. Nutrition-specific interventions, which directly impact an individual's nutritional status and prevent malnutrition, must be applied and used to bring about change and GMP is one of those specific interventions(6,10).

The government of Ethiopia initiated a program so that children participate in monthly GMP sessions at different health posts and progress in participation has been seen with national average performance of 44 percent in 2018 (11). But it is still low in the country if that number is less than 80% (12). On the other hand on a study conducted on southern part of Ethiopia indicated the utilization of growth monitoring and promotion to be just 16.9% , which is a very low number that raises a curiosity on utilization of GMP on other regions of Ethiopia (13).

Instead of being a program that's regular and sustainable ,GMP is being misunderstood as similar with the immunization activity and as a screening program for food aid (14). Furthermore, all the mothers were aware of immunization services but they rarely mentioned GMP programs when they were discussing about public health services for children, instead the mothers considered it as a part of other maternal and child health services (15).

The other problem is the promotion aspect of GMP. it seems to be neglected by health professionals, as a results of a study conducted in south Africa indicates that even though majority of Care Givers strongly agreed that it was important for children to be weighed regularly, more than half of them reported that their child's growth was not explained to them on the day of the assessment (16).

There was also a discrepancy with decreased utilization and continuation of GMP for people located at rural and urban areas, For instanse the overall findings of a study done in kenya found the coverage for continued GM to be low with the lowest coverage among children 12 to 24 months. Even more the coverage for continued GM in urban area were found to have a higher coverage than that of the rural part of the area (17).

Even though there is a sign of a slight improvement seen in the current 2019 (EMDHS), the numbers signify that there is still a huge work to be done on the prevention and treatment aspects of malnutrition. One of the preventive ways to do that is GMP. But improvement on GMP can only be successfully undertaken if the knowledge and utilization of GMP is properly assessed and reasons why are determined, so that appropriate actions will be taken. More specifically the Amhara region was literally the only region with zero percent of under 5 children whose weight for age was above +2 Standard deviation (SD) units and is among the top regions with high burden of malnutrition which could be related to poor knowledge or utilization of preventive methods like GMP (9). Therefore, the purpose of this study is to asses caregiver's knowledge and utilization of growth monitoring and promotion for under two years in children in Debre Berhan, Ethiopia, 2020 .

### **1.3 Significance of the study**

In Ethiopia malnutrition is widespread, despite many changes in the healthcare system, which gave more focus to GMP but with no remarkable success. Even though the government of Ethiopia started to implement the GMP, very little research has been conducted to assess the knowledge of caregivers about GMP and status of real-world practice of GMP at the most basic level.

This research could usefully bring important insights on the factors that influence successful implementation of GMP so that ministry of health , Amhara regional health bureau and Debre Berhan town health office or other organizations working in child survival programs design interventions to improve the activities of GM and conduct a more comprehensive package of interventions at the community level tailored to local needs as part of national and regional nutrition programs by linking them to or delivering them during GMP.

Generally this study will aid to collect information about the current utilization of GMP and to provide evidence-based results and recommendations for potential future implementations which may be conducted by a variety of governmental or non-governmental organizations to bring about a significant impact. It may also serve as a steppingstone and referred by other researcher's for further studies. Lastly it may be used by the health care providers to better the promotion aspect of growth monitoring and promotion at the regional and national level.

## 2. LITERATURE REVIEWS

### 2.1 Overview

GMP is a strategy that was initiated for the promotion of health. It enables mothers to have an insight about the normal growth or the lack of it in their children and to obtain specific relevant and practical guidance to assure continued regular growth and health in their children. The aim of all growth monitoring activities is achieving behavioral changes in the mother with respect to quick response to illness, child feeding and an understanding of the various factors which influence the growth and development of the child (18).

So basically ,as emphasized by United Nations International Children Emergency Fund (UNICEF's), the procedure of GMP program is that primarily the weight will be assessed with the result being interpreted after plotting it on the graph , then it will be analyzed to determine whether there is growth flattering or normal growth . After the analysis, the results will be communicated to parents with condoling based on results then the problem will either be solved or referred to a higher institution for better management (19).

A variety of anthropometric measurements are used to assess child's growth. Among them which are studied are weight, height, mid upper arm circumference, head circumference and chest circumference. But after a deep analysis of these measurements has led to the conclusion that weight for age is one of the most suitable parameters for measuring a child's growth at the field level (18).

Generally, GMP is a preventive strategy when implemented properly,

- It catches growth faltering at early stages and because weight changes relatively quickly, it detects early sign of health and nutrition problems.
- GM can propose an entry point to preventive and curative health care and serves as a collection of programs in line with critical reductions in malnutrition.
- GMP assumes key role in caring for children. This includes measuring of growth in children, noting and interpreting to give health advice, treatment and follow up.
- It likewise exhibits an achievement for routine health management information system data, utilization and coverage of preventive health services over time(20).

## **2.2 Why Monitor Growth?**

Other than its importance as an assessment role, GMP also has an educational Role that serves as a guide in teaching caregivers and the community on how nutrition, physical activity and illness can affect growth and by doing that it facilitates and motivates individual initiative and improved child care practices. The other role is promotional and motivational role which provides regular contact with primary health care services and facilitates their utilization. It raises caregivers' and communities attention and commitment to child growth and nutrition (21).

GMP depends on a procedure focused on behavioral change with caregiver's and the community in order to advance ideal health. The significance of growth monitoring and promotion has been appeared to have a positive value as indicated by various studies for instance results in an Indonesian study, the prevalence of underweight or stunting was higher among children who did not have a growth monitoring card. The prevalence of stunting was higher among children who didn't routinely go to health centers for GMP in the last 3 months, so this demonstrated that markers of malnutrition were found to be higher in those that do not utilize GMP (22).

## **2.3 Coverage of GM**

GM programs are being embraced in various developing nations. Small scale programs being carried out under committed supervision have given significant bits of knowledge in the operational limitations associated with growth monitoring. Activities of GM are effective in India, Indonesia and the Philippines. In spite of the fact that a relatively smaller scale than their counterparts in Asia, certain African nations like Kenya, Botswana, Lesotho and Gambia are likewise executing GM activities (18).

A cross sectional study conducted in Indonesia found out that there is a low coverage of growth monitoring program especially in rural locations (Possession of Growth Monitoring Card (30.2 %) Routine visits to Posyandu in the last 3 months (52.3%))which led to the prevalence of underweight and stunting among under-five children (22).

Overall findings of a study done in kenya found the coverage for continued GM to be low with the lowest coverage among children 12 to 24 months. Even more the coverage for continued GM in urban area were found to have a higher coverage than that of the rural part of the area(17).

A study conducted on southern part of Ethiopia indicated the utilization of growth monitoring and promotion to be just 16.9% even though the national average participation for GMP has reached 44 ,percent after its initiation program to participate children for monthly GMP ,as per reports of the government of Ethiopia by 2018, (12,13).

#### **2.4 Challenges of GMP implementation**

A study carried out in countries of the Eastern Mediterranean Region clarified a common constraints encountered in child growth monitoring programmes were categorized into informational, tangible and attitudinal. The informational constraints included lack of adequate training of personnel (reported by ministries of health (MOH) in 6 countries, 37%), followed by incorrect plotting of the measured data (5 countries, 31.3%). Problem of understanding and interpreting the growth curves were reported many times (4 countries, 25%). Tangible constraints included poor condition of weighing scales : lack of maintenance, standardization and timely replacements (4 countries, 25.0%). Attitudinal constraints were less common, but still a problem and included poor understanding by health care workers of the risk of underweight and the importance of identifying and referring these children (3 countries 18.8%) (23).

As a challenge (52.2%) of the health workers in a study conducted in northern Ethiopia reported that there was lack of GM equipment in their health facilities like weight scales, family health care cards, stationary materials and also absence of pamphlets to promote GM. In addition to the reports of the health workers the study found profession, educational status, work experience, availability of GM equipment and attitude to be significantly associated with GM (24).

On observational part of a study done in Butajira, from the samples of all the family folders taken from each health posts of that area none of the weight for age growth chart were plotted when the investigators checked the history of under two children the reasons the Health extension workers ( HEWs) put out for that was because of huge work load they didn't have the time to plot the chart and even though in majority of the health posts weight measuring instrument were available , the HEWs stated that they are not that much focused on weighing children below six months because of the nutritional counseling that they are giving to the care givers focus on complementary feeding (25) .

## **2.5 Factor affecting knowledge and utilization of GMP**

Different studies have discussed the factors that affect the utilization of GMP. For instance, according to a study in South Africa, with the exception of weight, anthropometric measurements were not performed routinely for the majority of children aged 0 - 36 months, indicating poor implementation. Correct procedures, as described in guidelines, were followed for weight measurements in 68.1% of cases, followed by head circumference (56%), length/height (18.3%), and MUAC (10.2%). As a factor, various barriers were said to affect the implementation of nutrition interventions which are poor staff knowledge and skills, lack of time, staff shortages, and/or frequent staff changes of trained staff owing to attrition or rotation (16).

A community based cross-sectional analytical study in Kenya found no significant associations on most of the socio demographic characteristics but the respondents with college levels of education were found to be more likely to take their children for GMP and to continue doing that compared to those who had primary level of education making it similar to another study in Ethiopia. In addition to Accessibility of health facilities/ services being critical, Mothers of higher socio-economic status were more likely to continue with GM because they could afford transportation costs to the health facilities for continued GM in the study populations (17,26).

Nutritional counseling and education is crucial to boost Mothers awareness about health care services. From a report out of a study conducted in South Africa mothers who received or said there is Nutritional counseling and education at the health facility they visit were found to have a good enough knowledge about GMP than those who replied there is none. This finding was also similar to that of a study in Ethiopia and a study that used focus group discussion with panels in South Africa(26).

A cohort study conducted in Rwanda found the average utilization rate over three years to be between 75-79% in which at the last year the utilization was reported to be 78.4 .Unlike the study the Rwandan study the utilization of GMP was found to be quite low in studies conducted in Indonesia 30.2%,Kenya 53.3%, Southern Ethiopia 16.9% , (13,17,22,27).

Furthermore, a Zambian prospective study found GMP programs to perform poorly due to weak monitoring and supervision, poor practices among health workers and the lack of motivational packages attached with the program (28).

On the other hand, a research done in southern Ethiopia found utilization of GMP services to have no significant association with workloads of mother, knowledge about GMP chart, birth order and continuation of GMP after full immunization. Instead, the wealth index, place of delivery, large family size and regular GMP frequency were found to be associating factors for utilization of GMP services (13).

In Ethiopia husbands are mostly the primary spokespersons for their family, and their opinion and decision are highly valued by mothers and children in utilizing health or any other services. Qualitative Study conducted in Loka Abaya District reported that husbands' encouragement to GMP attendance was uncommon and also the nearby health facilities did little to inform and promote GMP to the community (29).

Mothers who gave birth at the health facility and participants that had to travel less than one hour to reach the nearest health facility were found to be more knowledgeable about child feeding and growth monitoring according to a study conducted in Butajira. The study also found that the higher the educational level of the mother, the more likely the mother is to utilize GMP than illiterate mothers. Regarding occupation of the mother, those mothers who were housewives were less likely to utilize GMP than farmers. Mothers with adequate child feeding and growth chart knowledge were also about 5 times more likely utilize GMP than those mother with inadequate knowledge but other factors like media were not found to be significantly associated (25).

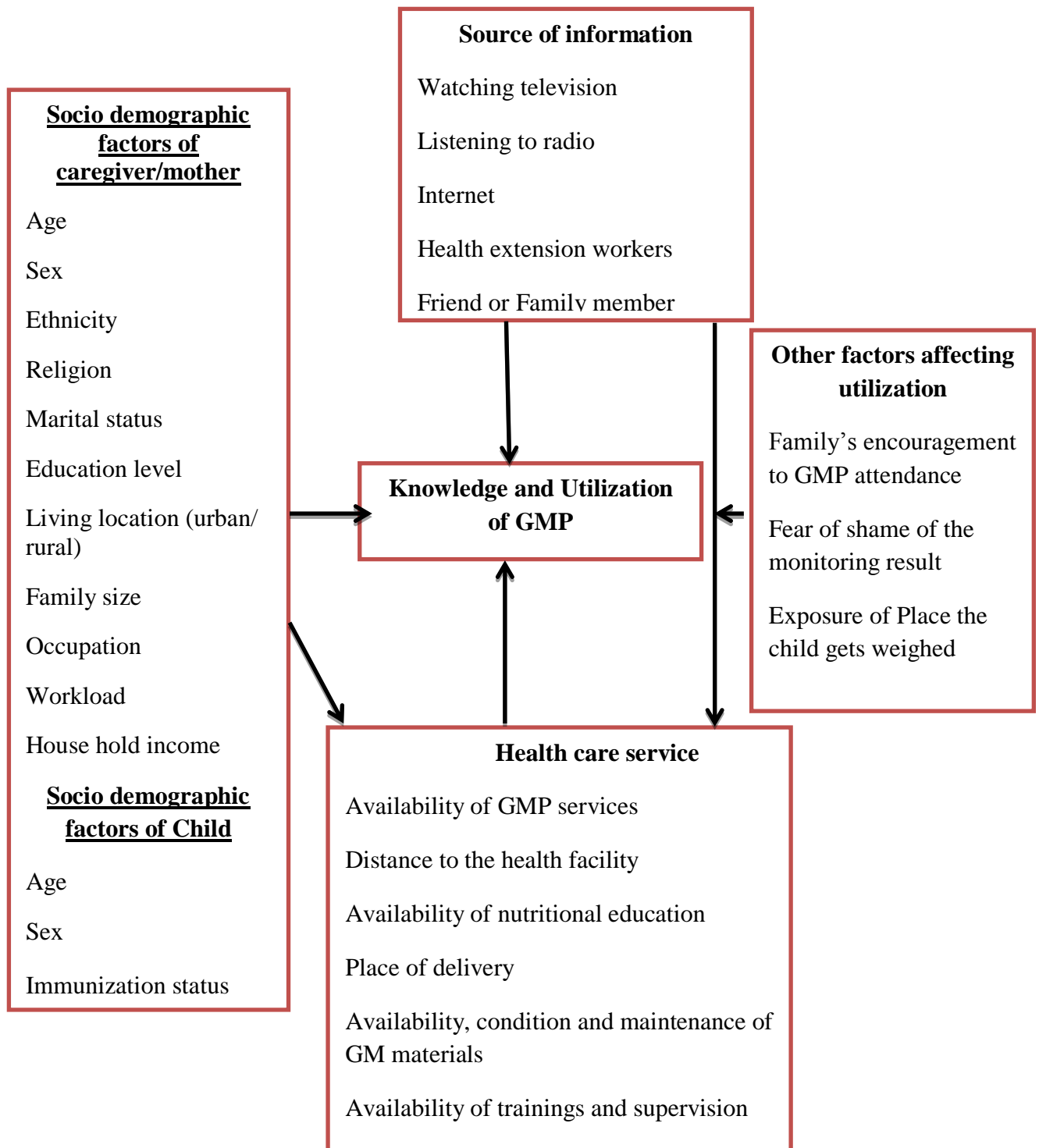
Positive relationship between knowledge of Mothers' child feeding and growth chart was a predictor of GMP utilization in studies from Ghana and Kenya. Likewise, another similar study conducted on the southern part of Ethiopia a while ago found association of knowledge about growth monitoring and promotion to do with utilization of GMP, (17,25,30).

## **2.6 The Impact of Maternal knowledge on child growth and monitoring**

A qualitative exploratory study on perceptions of GMP among an International Panel of District Medical Officers found the main reason for the mothers to come was for vaccinations and majority of the medical Officers did not put communication as their primary objective. Some even tended to consider communication as a 'no-act', while weighing was considered as the technical justification of their presence in GMP. Communication with parents using the growth curve was found to be secondary. It was never either reported as an objective of GMP or as a criterion to evaluate the program efficiency. The growth chart was considered to have mainly diagnostic purposes and used for the health information system this was also supported by studies from Afghanistan and Ethiopia (13,31,32).

On the other hand, a cross-sectional study in Ghana, 70.3% of the caregivers expressed the meaning of GMP as a weighing program whilst 26.7% related it as immunization. About 53.0% of the caregivers had good knowledge in children's GMP in which they associated the importance of GMP to improve childcare practices. A higher number (87.6%) of mothers having a good knowledge of GMP was also noticed in a similar study conducted in Ghana(33,34).

The Exploratory Qualitative Study conducted in Loka Abaya district, respondents (Mothers) reported that they didn't know about GMP and they thought the indigenous knowledge about feeding and child growth are enough, or they become to know about it late. Even that was not as a result of the health institutions effort but others in the village influenced them regarding bringing their children to GMP session. Fear of the shame that would come because of the measurement result , weighing of the children in an open field just like goods and exposure to 'bad air' or fear of evil eye when cloth was removed for measurement were one of the reasons found to be influencing the mothers for GMP session (29).



**Figure 1:** Conceptual frame work constructed by the investigator after reviewing different litritures(14,17,18,23-29)

### **3. OBJECTIVES**

#### **3.1 General objective**

- To assess caregiver's knowledge and utilization of growth monitoring and promotion for children under two years old in Debre Berhan, Ethiopia.

#### **3.2 Specific objective**

- To assess knowledge of caregiver's about growth charts and child feeding practices for under two years children.
- To assess the utilization of Growth monitoring and promotion among caregiver's of under two years children.
- To identify factors affecting the knowledge and utilization of Growth monitoring and promotion.
- To explore challenges encountered by health extension workers that affect growth monitoring and promotion utilization by caregivers.

## **4. METHODS AND MATERIALS**

### **4.1. Study area and period**

The study was conducted in Debre Berhan town from February 15- May 26, 2020. Debre Berhan town is a city and woreda in central Ethiopia. Located in the Semien Shewa Zone of the Amhara Region, about 120 kilometers north east of Ababa, capital of Ethiopian and about 695kms far away from Bahir Dar town, which is the capital city of Amhara regional state. Debre Berhan has nine (9) urban 'kebeles'(small administrative units) and 5 rural kebeles and has a total population of 81,756 ; among which 19,214 were mothers of reproductive age groups and 11,037 were children less than five years of which 2,649 are infants. The town has 24,056 households at urban and rural areas. The town has one private hospital, one referral hospital, three health centres and 14 health posts. Debre Berhan also has 2 HEWs deployed in pairs for every kebele, and affiliated with each kebele's health post(35).

### **4.2. Study design**

Community based cross sectional study supplemented with qualitative design was conducted.

### **4.3. Population**

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

All caregiver's of under 2 years old children and health extension workers that were found in Debre Berhan town during the study period.

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

Quantitative study: Randomly selected caregiver's with children less than 2 years of age who lived in kebeles that were selected randomly during the study period at Debre Berhan.

Qualitative study: purposively selected health extension workers that were working in the community health posts Debre Berhan.

#### 4.4. Eligibility criteria

##### 4.4.1. Inclusion criteria

- Mothers (caregiver's) of children less than 2 years of age that were present at the time of data collection period and give an informed consent.
- Health extension workers at selected kebeles that gave informed consent

##### 4.4.2. Exclusion criteria

- Caregivers who were bed ridden due to an illness that limits the ability of the respondent to reply to questions asked by the interviewer.

#### 4.5. Sample size determination

A single population proportion formula was used to estimate the sample size. The prevalence 47% was taken for Knowledge of Growth Monitoring in Areka Town, Southern Ethiopia, 2017(26) after comparing it with other two studies because it yielded the highest number. Then the sample size was estimated to be 383 with 10% non response rate included, the final sample size became 421 with confidence level of 95% (level of significance,  $\alpha=0.05$ ) marginal error of 5%.

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

$$n = \frac{(1.96)^2 \times 0.47(1-0.47)}{(0.05)^2} = \frac{3.8416 \times 0.2491}{0.0025} = 383$$

$$n = 383 + 10\% = 421$$

Where: n = the desired sample size

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

d = degree of precision 5%

p = prevalence of utilization of GMP

With 10% non-response rate, the final sample size was estimated to be 421

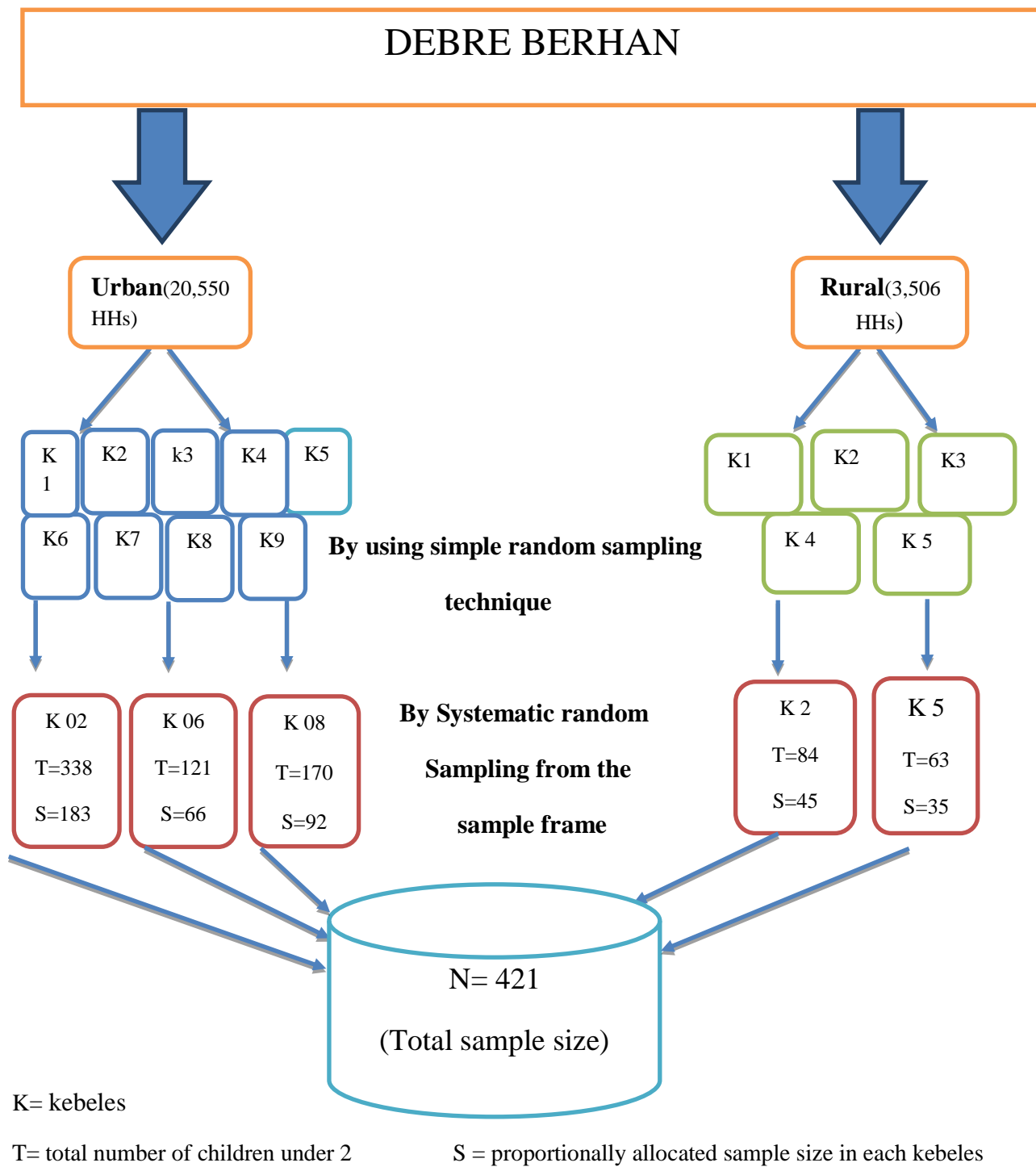
Table 1 : Variables and studies used to calculate the sample size by using their proportion

Variables	Place of study	Proportion used for calculation of sample size	Calculated sample size with nonresponse rate
Knowledge	Areka Town	47%	383
Knowledge	Butajira	64%	354
Utilization		11%	151
Utilization	Mareka district,	16.9%	216

#### 4.6. Sampling procedure

The town consists of 14 kebeles (9 urban and 5 rural kebeles). By using simple random sampling method (lottery method) 5 kebeles (3 urban and 2 rural kebeles) were selected namely from urban (kebeles 02, 06 & 08) and 2 from rural areas (atakiliti and Zanjira ). Then using the list of under two years children from HEW's in each of selected kebeles (K2=338, K6=121, K8=171, K2=84 & K5=63), sample frame was prepared. Using the sample frame, the total samples size was allocated proportionally according to the number of HHs with under 2 years children to each of the selected kebeles. The first of the HHs were selected randomly and the rest of the subjects were included through systematic sampling techniques, every 2<sup>nd</sup> HHs with under 2-year children for each kebele were assessed.

#### 4.7. Sampling technique



**Figure 2:-** Schematic representation of sampling procedures of the study, Debre Berhan, Ethiopia, 2020.

## 4.8. Study variables

### 4.8.1. Dependent variable

- Knowledge and utilization of GMP

### 4.8.2. Independent variables

#### ➤ **Socio demographic characteristics of caregiver**

- Age of the mother/caregiver
- Marital status
- Ethnicity
- Religion
- Living area (urban/rural)
- Family size
- Educational status of caregiver/mother
- Occupation of caregiver/mother
- Workload of caregiver/mother
- Household Income

#### ➤ **Socio demographic characteristics of the Child**

- Age, sex and immunization status

#### ➤ **Health care service characteristics**

- Availability of GMP services
- Time it takes or distance to the health facility
- Place of delivery
- Availability of trainings, supervision and condition of GM materials.

#### ➤ **Other factors affecting GMP utilization**

- Family members encouragement for GMP attendance
- Perception towards the results of the GM
- Privacy of the child weighing place

#### ➤ **Sources of information**

- Television, radio, Internet, Health extension workers ,Friend or Family members

## 4.9 Standard and operational definition

- **Knowledge:** Knowledge was assessed based on 12 questions which contain questions concerning meaning of GMP ,importance of GMP, Frequency of attendance in GMP, Purpose of growth chart ,initiation of breastfeeding and complimentary feeding, feeding frequency and interpretation of all the four growth curves which have 12 scores: Respondents who scored 0-4 points were considered of having very low knowledge in GMP activities; those participants who scored 5-8 points from the 12 were considered to have moderate knowledge in GMP activities while at last those who scored 9 and above points were classified as having high/good enough knowledge in GMP then intern considered to be adequately knowledgeable(33).
- **Utilization of GMP services:** Participation of a child under two years for GMP services at least once for 0 month age old child , at least two times for 1–3 months old child , at least five times for 4–11 months old and at least four times per year for 12–23 months old age child with the weight of the child marked on the growth chart were considered to have utilized GMP(13).
- **GMP:** is the process of following the growth rate of a child in comparison to a standard periodically and giving counselling services for the wellbeing of the child.
- **Mother and child health card:** A comprehensive health card that was prepared by ministry of health which contains different health information's including about danger signs for newborns and mothers, variety of immunizations schedules, vaccination certificates weight for age growth chart for both sex and the weight for age child growth charts for both sex and used to plot the growth pattern of the child attending GMP.
- **Caregiver:** any adult person, which can be (Mother, Father, Grandparents, Aunt, Uncle or a legal guardian), who is giving direct care and currently looking after the child's every need.
- **Health Extension workers:** trained personnel in kebele health posts responsible for identifying pregnant women, delivering antenatal and postnatal care, routine monitoring of children and refereeing them to a better health setup in case of a higher health issue .

#### **4.10 Data collection tool and procedure**

The quantitative data was collected by Pretested interviewer administered questionnaire. The questionnaire was adopted after review of literature and other similar study (25,33).Data collection tool consisting seven parts with closed ended questions about socio-demographic characteristics, knowledge and utilization of GMP and other factors that may influence GMP was used to collect the quantitative data's. The questionnaire contained 53 questions and took up to 30 minutes to complete the face to face interview .Mother and child health card was reviewed to check the utilization of GMP services .6 data collectors were used and each data collectors went home to home with the interviewer administered questionnaire to collect the data.

In order to explore the health extension workers point of view, on the implementation of GMP, qualitative data was collected by the principal investigator using adopted in depth interview guide to purposefully selected health extension workers with 14 open ended questions and probe questions in between so that it would aid to collect a rich and comprehensive data on the health care aspect(25).During the interview the principal investigator took notes with the help of tape records to interview selected study participants. 10health extension workers at the community were selected for the interview but only six in- depth interviews were conducted until the information saturated. Each interview took place in health post offices of HEWs in order to provide privacy and confidentiality for the study participants for 30 minutes to 45 minutes.

#### **4.11 Data quality assurance**

Both the questionnaires were prepared in English language then translated into Amharic then translated back to English to check for language consistency and completeness. To maintain the quality of data, pretest was done in 5% (21) prior to interview and before the actual data collection period in kebele 07, Debre Berhan. The pretest data was not included in the analysis. This was helpful for the investigators to screen out vague questions and modify some of the question item as soon as possible. Prior to data collection period, 2 days of training was given for data collectors by the principal investigator about objectives of the study, the sensitivity of

the issue, confidentiality of responses, contents of questionnaires and how they are going to approach the study participants.

Onsite supervision was given to solve any ambiguity with data collection tools. Every questionnaire was checked for its completeness and consistency by data collectors on site and by principal investigator at the end of each data collection day. Any incomplete information in relevant section was excluded from entry after data collection.

#### **4.12 Data processing and analysis**

Quantitative part: After the completion of the data collection the collected data was categorized, coded, cleaned and recorded. The data entry was made by using Epi data version 4.0.2 and it was exported to SPSS software version 21 for the analysis. Descriptive analysis was employed to describe the percentages and number distributions of the respondents for socio-demographic characteristics. Bivariate and multivariable logistic regression analyses were used to see the association of independent with the dependent variables. Variables that have P value  $<0.25$  on bivariate analysis was fitted into multivariable logistic regression model to control for confounder. Finally, the strength of association was measured using odds ratios with 95% confidence interval (CI). Statistically significance level was declared at p-value  $< 0.05$  and the data is presented by tables, texts and graphs.

Qualitative part – First the data's was recorded then verbal transcription of each tape records and translation to English was made by principal investigator using Microsoft (MS) word .The interview transcripts were reviewed thoroughly and read repeatedly to help familiarize oneself to the data and develop codes. Then data were coded, analyzed and those with similar idea categorized or grouped into themes (2 themes and 9 sub-themes) by Nvivo 12.0 software then summarized by the main themes.

#### **4.13. Ethical consideration**

Ethical clearance was obtained from the institutional review committee of department of nursing, college of Health science, Addis Ababa University. By explaining objectives of the study and its significance, relevant permission was obtained. At individual level after explaining the purpose of the study, consent was obtained from all participants prior to their participation in this study.

The data was collected in a way to ensure confidentiality of the respondent. Study participant was informed that the information would not be used for other researches and never be exposed to third party. The participants were informed that their participation in the study is voluntary and they have the right to stop responding to our interview at the time they want. Furthermore, they were informed that any response or desire not to participate would not affect the service utilization.

#### **4.14. Dissemination of results**

The finding of this study will be submitted to Addis Ababa University, college of health science, school of nursing and midwifery. The findings will also be disseminated to concerned governmental and non-governmental organizations and will be made available at College of health science library. Attempt will be made to present the finding in national and international conference. Finally, efforts will also be made to get this paper published in peer- reviewed and reputable journal.

## 5. RESULT

### 5.1 Socio demographic and economic characteristics

Out of 421 selected sample size, 402 have participated giving a response rate of 95.4 %. Gender wise, 208(51.7%) of children of the caregivers were boys and the majority 322(80%) of the participants were from urban residence. From the total assessed children who were under 24 months of age, the mean (SD) age in month of the children was 11.12(SD 5.6). The mean (SD) age in year of their caregivers was 26.4(SD 5.9).

Nearly half of the mothers 196 (48.8%) attended primary education and more than half of them 246 (61.2%) were housewives. Almost all the respondents have access to one type of source for media (Table 2).

**Table 2** Sociodemographic characteristics of caregivers in Debre Berhan, Ethiopia, 2020. (n=402)

Variables		Frequency	Percent (%)
<b>Age of the caregiver</b>	<b>15-19</b>	74	18.4
	<b>20-24</b>	104	25.9
	<b>25-29</b>	68	16.9
	<b>30-34</b>	107	26.6
	<b>35-39</b>	39	9.7
	<b>&gt;40</b>	10	2.5
<b>Ethnicity</b>	<b>Gurage</b>	27	6.7
	<b>Oromo</b>	54	13.4
	<b>Amhara</b>	301	74.9
	<b>Tigre</b>	19	4.7
	<b>Somali</b>	1	.2
<b>Religion</b>	<b>Orthodox</b>	308	76.6
	<b>Muslim</b>	43	10.7
	<b>Catholic</b>	18	4.5
	<b>Protestant</b>	33	8.2
<b>Education level</b>	<b>Illiterate</b>	72	17.9
	<b>Read and write</b>	33	8.2
	<b>Primary</b>	196	48.8
	<b>Secondary and above</b>	101	25.1
<b>Occupation</b>	<b>Housewife</b>	246	61.2
	<b>Farmer</b>	23	5.7
	<b>Merchant</b>	46	11.4
	<b>Government employee</b>	55	13.7
	<b>Private employee</b>	24	6.0
	<b>Student</b>	8	2.0
<b>Marital status</b>	<b>Married</b>	361	89.8

	<b>Single</b>	14	3.5
	<b>Divorced</b>	27	6.7
<b>Husband education</b>	<b>Illiterate</b>	15	3.7
	<b>Read and write</b>	45	11.2
	<b>Primary</b>	132	32.8
	<b>Secondary and above</b>	210	52.2
<b>Husband occupation</b>	<b>Daily laborer</b>	61	15.2
	<b>Farmer</b>	68	16.9
	<b>Merchant</b>	72	17.9
	<b>Government employee</b>	111	27.6
	<b>Private</b>	81	20.1
	<b>Student</b>	9	2.2
<b>Average income</b>	<b>Low</b>	260	64.7
	<b>Middle</b>	115	28.6
	<b>High</b>	27	6.7
<b>Source of information (Media)</b>	<b>Radio</b>	98	24.4
	<b>TV</b>	247	61.4
	<b>Internet</b>	43	10.7
	<b>Others</b>	14	3.5
<b>Family size</b>	<b>&lt;or equal to 5</b>	259	64.4
	<b>&gt;5</b>	143	35.6

Others\* family members, neighbors, marketplace conversations

The majority of the children 385 (95.8%) were delivered in a health institution while 17(4.2%) were delivered at home. Nearly all of the children 398 (99%) has received immunization at least once by the time of the survey (Table 3).

**Table 3** socio demographic characteristics specific to the child, Debre Berhan, Ethiopia, 2020. (n=402)

<b>Variables</b>		<b>Frequency</b>	<b>Percent (%)</b>
<b>Living area</b>	<b>Urban</b>	322	80.1
	<b>Rural</b>	80	19.9
<b>Sex of the child</b>	<b>Male</b>	208	51.7
	<b>Female</b>	194	48.3
<b>Child age</b>	<b>0-5 month</b>	88	21.9
	<b>6-11 month</b>	114	28.4
	<b>12-17 month</b>	132	32.8
	<b>18-23 month</b>	68	16.9
<b>Place of delivery</b>	<b>Home</b>	17	4.2
	<b>health facility</b>	385	95.8
<b>Immunization history</b>	<b>Yes</b>	398	99.0
	<b>No</b>	4	1.0
<b>Siblings</b>	<b>Yes</b>	187	46.5
	<b>No</b>	215	53.5

## 5.2 Characteristics related to the health care service institutions

From the assessed caregivers, majority 386(96%) of them were able to show their health card when ask to present it.320(80.6%) participants replied that there is a health care facility close by and said it would take them less than an hour to reach the nearest health care facility.

When participants were asked for which type of health services they visit a health facility most frequently, only 29(7.2%) said they took their child for their weight to be measured and the majority 297(73.9%) said they took their child for immunization appointments. Two hundred and thirty five (58.5%) of the study participants stated that they most frequently visit a health center for health services while 149(37.1%) and 18(4.5%) said they frequently utilize health post and private clinic respectively (Table 4).

**Table 4** Characteristics related to the health care service institutions, Debre Berhan, Ethiopia, 2020 (n=402)

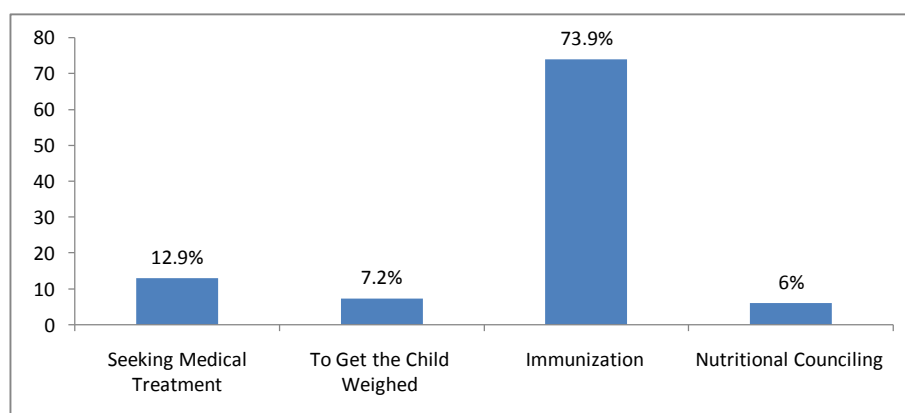
Variables		Frequency	Percent
Have health card	Yes	386	96.0
	No	16	4.0
Health facilities around home	Yes	324	80.6
	No	78	19.4
Time it would take to reach the nearest health facility	>1 hour	324	80.6
	An hour and more	78	19.4
To what service take your child to health facility	Weighting	29	7.2
	Nutrition advice	24	6.0
	Immunization	297	73.9
	Treatment of diseases	52	12.9
Received advice from health worker	Yes	178	44.3
	No	224	55.7
Where do you get child health service	Health center	235	58.5
	Health post	149	37.1
	Private clinic	18	4.5

While more than half (60.2%) of the respondents stated there is a weighing material in the health posts they visit, more than half (59%) of them said there is no nutritional counseling and education given there in those facilities (Table 5)

**Table 5** Availability of health care services that are specific to the child, Debre Berhan, Ethiopia, 2020.

Variables		Frequency	Percent
Weighing	Yes	242	60.2
	No	160	39.8
Nutrition counseling/education	Yes	165	41.0
	No	237	59.0
Treatment of diseases	Yes	299	74.4
	No	103	25.6
Immunization	Yes	340	84.6
	No	62	15.4
Plumpy nut/ powdered milk	Yes	135	33.6
	No	267	66.4
vitamin A supplementation	Yes	319	79.4
	No	83	20.6

Large number of the participants 297(73.9%) stated it was for immunization reasons that they visit the health facility most frequently while 52(12.9%) said it was for seeking treatment. Only 29(7.2%) replied for weighing purposes while the remaining 24(6%) goes to the health facility frequently for nutritional counseling and education.



**Figure 3** Caregiver's reason for most frequent visit to a health facility for the child, Debre Berhan, Ethiopia, 2020 (n=402)

### 5.3 Growth monitoring and promotion Knowledge of Caregivers

The participants were presented with a variety of questions. Specifically, caregivers were asked questions about the importance of GMP, about its schedule, about initiation of breast and complementary feeding and additionally they were asked the frequency of feeding for different age groups of children.

When caregivers were asked about the meaning of GMP more than half 210(52.2%) of them described it as a form or part of the immunization process while 44(35.8%) described it correctly as a weighing process, 18 (4.5%) said it was treatment of an illness and 30(7.5%) said they do not know at all about what it meant. Majority of the respondents said they either don't know 106(26.4%) or twice in a quarter 121(30.1%) when asked about the routine schedule of GMP (Figure 4).

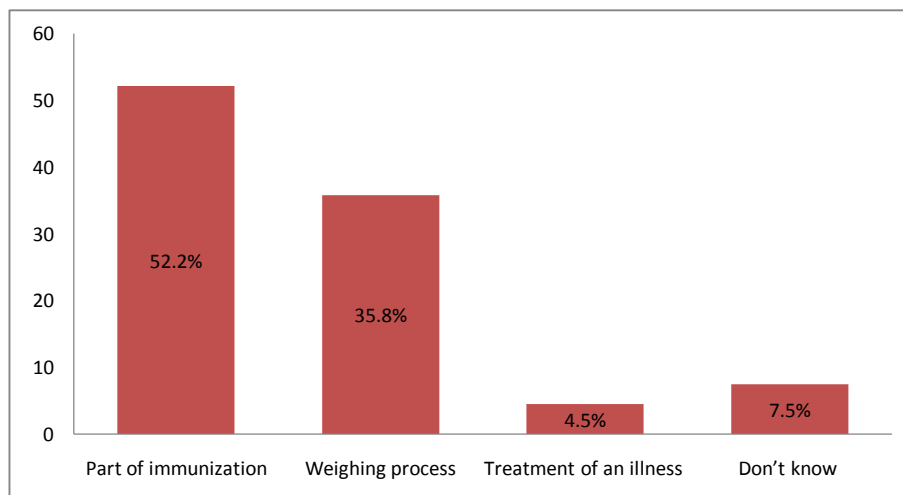
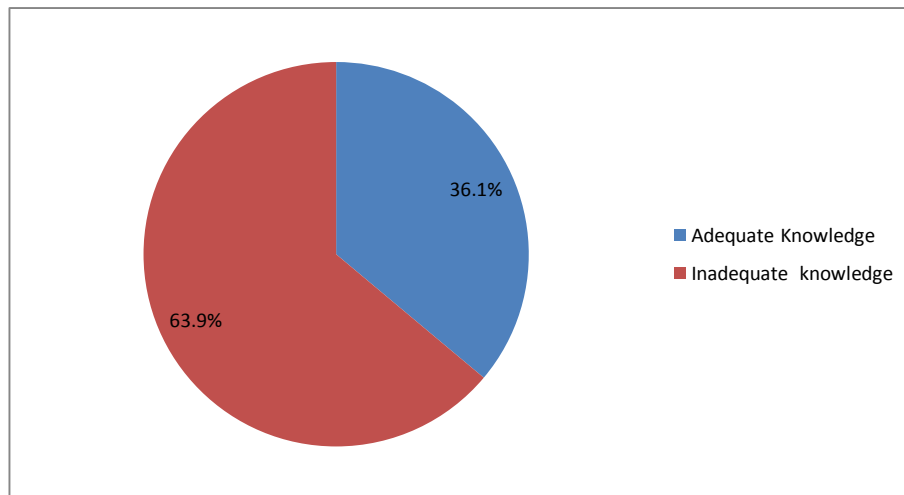


Figure 4 Caregivers description about the meaning of GMP according to their understanding Debre Berhan, Ethiopia, 2020(n=402)

However, out of 402 respondents a huge majority of them 379(94.3%) responded with the correct time for initiation of complementary feeding and 325 (80.8%) correctly stated the beginning and duration of exclusive breast feeding for the child. When caregivers were also presented with questions about child feeding frequency 381(94.8%) of them knew to feed a 0-6 month old child on demand at least 8 times a day and 364 (90.5%) of them said they would feed their child at least 3 times while 306(76.5%) stated correctly that they would feed their 12-23 month old child 4 or more times a day. Finally out of the total 402 assessed participants, only 145(36.1%) of the respondents scored high enough value (>9) to be considered knowledgeable while 257 (63.9%) were not found to be adequately knowledgeable .More specifically 176(43.8%) and 82(20.4 %) participants scored a moderate and low level of knowledge respectively.



**Figure 5** Knowledge of caregivers about growth monitoring and promotion, Debre Berhan, Ethiopia, 2020.

#### **5.4 Factors associated with knowledge of Growth Monitoring and Promotion**

Amongst the independent variables that were entered with knowledge of GMP for bivariate analysis caregivers age, level of education ,occupation ,presence of health card ,health advice from a health professional, explanation about the result of weight , nutritional counseling and education, age of the child , residence ,average monthly income, husbands level of education and occupation, source of media , type of utilized health facility, benefit of weighing a child , fear of evil eye ,shame of impending bad result of child weight were found to be significant at  $p < 0.25$  and when entered again for multiple logistic regressions only three variables (level of education, explanation about result of weight and nutritional counseling and education) were associated with knowledge of GMP.

Level of education for the caregivers was significantly associated with knowledge for GMP. Illiterate caregivers were 3 times less likely to know about GMP than those who attended secondary or above level of education [AOR=3.54; (95% CI=1.22, 10.72)]. Respondents who replied the weight and status of their child was not explained to them in detail after a GMP session were 5 times less likely to have adequate knowledge about GMP than those whose child's weight was explained to them after measurement [AOR=5.02; (95% CI=2.626, 9.597)]. Additionally, those who said there was no nutritional counseling and education sessions at the health facility were 2.4 times less likely to be knowledgeable about GMP than those that said there is a nutritional counseling and education session at the health facility they utilize [AOR=2.4; (95% CI=1.356, 4.359)].

**Table 6 Association of independent variables to caregiver’s knowledge of GMP, Debre Berhan, Ethiopia, 2020. (n=402)**

Independent variable	Knowledge n (%)		COR (95%CI)	AOR (95%CI)
	Adequate	Inadequate		
<b>Illiterate</b>	<b>11(2.73 %)</b>	<b>61(15.17%)</b>	<b>4.281 (2.016 -9.089)</b>	<b>3.54(1.22-.10.72) *</b>
Read and write	13(3.23 %)	20(4.97%)	1.188 (0.533-2.647)	1.083(0.350 -3.347)
Primary	77(19.15%)	119(29.60%)	1.193(0.733-1.941)	1.611(0.812-3.192)
Secondary and above	44(10.94%)	57(14.17%)	1	1
<b>Explanation about weight status of the child after measurement</b>				
Yes	97(24.12%)	88(21.89%)		1
<b>No</b>	<b>48(11.94%)</b>	<b>169(42.03%)</b>	<b>3.881 (2.521 -5.974)</b>	<b>5.02 (2.62-9.597) **</b>
<b>Presence of Nutrition counseling/education at the health facility</b>				
Yes	79(19.65%)	79(19.65%)		1
<b>No</b>	<b>66(16.41%)</b>	<b>178(44.27%)</b>	<b>2.697 (1.771 -4.108)</b>	<b>2.431(1.356-4.359) **</b>

\* Significant at P value <0.05, \*\* Significant at P value <0.01

## 5.5 Utilization of Growth Monitoring and Promotion and associated factors

One hundred and sixty-three (40.5%) participated in GMP services for a specific frequency according to their child’s age. When the health card was reviewed for weight marking of the growth chart, 54(13.4%) of the caregivers held a mother and child health card on which the growth chart was marked by the weight result of the child after measurement .which made the final overall utilization 13.4% during the study.

Out of all the 402 participants majority of them 386 (96%) put forth their health card when asked to do so. when asked about whether there is a health facility nearby, 324 (80.6%) Confirmed that there is a health facility nearby and same amount of people said that it takes them under an hour to reach that health facility. From the total respondents, 352 (87.6%) agreed the benefit of routine monitoring of growth of the child even though 52 12.9 of them said they have previously missed the appointments for GMP schedule and from them ,as the figure down below indicates, 22 (42.5%) replied they were too busy,17(32.7%) said the missed it because they forgot the time of the appointment schedule,9(17.3) said it was because they feared the new Corona Virus outbreak and lastly 4(7.7%) replied they were out of town.

## 5.6 Factors Associated with Utilization of Growth monitoring and Utilization

Multiple independent variables were entered for bivariate analysis and the residence of the participant, Child's age, knowledge of GMP, occupation and education level of the caregiver, family size, explanation of the weight of the child after measurement, nutritional counseling and education, health advice from health professional, time it takes to reach a health facility, benefit of routine weight measurement, choice of health facility, husband's occupation and education level were declared to have significant value with p value of  $<0.25$  but when they were analyzed for multiple logistic regression residence, child's age, family size, time it takes to reach a health facility and caregiver's knowledge of GMP came out having a significant association with a p value of  $<0.05$ .

Residents who lived on the rural area were found to be more likely to utilize GMP than those who resided in the urban side of the city [AOR = 0.128; (95% CI=0.035, 0.474)]. The odds of young child age group or infants (0-5 and 6-11 month) not to utilize GMP were lower by 87.7% and 80.7% respectively compared to the 18-23 month age group [AOR=0.123 and 0.193;(95% CI=0.029, 0.517 and 0.049,0.764)]. Children's with whom there were number of family members which are more than 5 were 3 times less likely to utilize GMP than those with smaller number of people living in the same household [AOR=2.97; (95% CI =1.171,7.536)]. The odds of not utilizing GMP were lower by 94% for those who travel less than an hour to reach the health facility [AOR=0.06 ; (95% CI=0.014,0.261)] Finally caregivers who had poor knowledge of GMP were found to be 2.4 times less likely to utilize GMP than those who had good GMP knowledge [AOR=2.450; (95% CI=1.125-5.332)].

**Table 7** Association between independent variables and caregiver's utilization of growth monitoring and promotion. Debre Berhan, Ethiopia, 2020.(n=402)

Independent variables	Utilization of GMP		COR	AOR
	Yes	No		
<b>Residence (living area )</b>				
Urban	35(8.7%)	287(71.3%)	1	1
<b>Rural</b>	<b>19(4.72%)</b>	<b>61(15.1%)</b>	<b>0.392(0.21 -0.730)</b>	<b>0.128(0.035-0.474)</b> **
<b>Age of a child in months</b>				
<b>0-5 month</b>	<b>17(4.2%)</b>	<b>71(17.6%)</b>	<b>0.331 (0.116- 0.95)</b>	<b>0.123(0.029 -0.517)</b> **
<b>6-11 month</b>	<b>21(5.2%)</b>	<b>93(23.1%)</b>	<b>0.351 (0.126 -0.981)</b>	<b>0.193(0.049-0.764) *</b>
12-17 month	11(2.7%)	121(30.1%)	0.873 (0.291 -2.623)	0.754 (0.196 -2.9)
18-23 month	5(1.3%)	63(15.7%)	1	1
<b>Family size</b>				
<or equal to 5	44(10.9%)	215(53.4%)	1	1
<b>&gt;5</b>	<b>10(2.5%)</b>	<b>133(33%)</b>	<b>2.722 (1.325 -5.591)</b>	<b>2.97(1.171-7.536) *</b>
<b>Caregivers Knowledge of GMP</b>				
Adequate	31(7.71%)	114(28.3%)	1	1
<b>Inadequate</b>	<b>23(5.72%)</b>	<b>234(58.2%)</b>	<b>2.76(1.543-4.961)</b>	<b>2.450(1.125-5.332) *</b>
<b>Time it takes to reach the health facility</b>				
<b>Less than 1 hour</b>	<b>49(12.18%)</b>	<b>275(68.4%)</b>	<b>0.384(0.148-1)</b>	<b>0.06(0.014-0.261)</b> **
An hour or more	5(1.3%)	73(18.1%)	1	1

\* Significant at P value <0.05, \*\* Significant at P value <0.01

## 5.7 Qualitative result

A total of 6 individuals were enrolled in the in-depth interview. From the total six participants, 5 of them were health extension workers assigned on health post of different kebeles and one was a nurse working in a health center at GMP and immunization office. All the interviewed respondents were female

Table 8 Basic information of participants involved on the in-depth interview Debre Berhan, Ethiopia, 2020.(n=6)

Code of HEW	Age	Sex	Kebele	Experience
HE1	32	Female	02	3 months at this health post and 3 year on previous local health post
HE 2	27	Female	09	2 years
HE3	24	Female	07	1 and a half year
HE4	29	Female	08	2 years
HE5	34	Female	05	9 years
HE6	25	Female	04	2 years

After the data's that were collected were thoroughly read for better understanding and looking for some sort of pattern or similarities, they were coded and those codes were then grouped into themes and subthemes according to their similarity

Table 9 Summary of a table containing themes, sub themes and codes after analysis of qualitative data Debre Berhan, Ethiopia, 2020.

Themes	Sub themes	Codes
GMP perception	Importance of GMP	Early detection of malnutrition, advice to mother, prevents under nutrition and chart used as guide
	GMP implementation	GMP every month, using the growth chart, weighing the child
	GMP Meaning	Follow up of weight, Weight status of the child
Challenges	Health staff condition	Absent HEW's, shortage of staff, increased workload, lack of determination, years of experience
	Health post setting	Closed health posts, lack or shortage of materials, shortage of plummy nuts
	Trainings	Absence of trainings, few trainings, trainings focused on other topics,

	Supervision and monitoring	lack of supervision and monitoring, negligence of concerned bodies
	Community setting	Crowded community, misunderstanding by the community, fear of COVID 19 by the community, too many homes to cover in the community
	Mixed schedule with immunization	GMP as part of immunization, stopping GMP and immunization in health centers.

## **In depth interview**

### **Perception of GMP**

All of the health extension workers that were involved in the in-depth interview had a similar overall know how on the meaning of GMP and its projected importance for the community in particular child health. Majority of them mentioned how it is a follow up process instead of being a onetime thing and also associated GMP's significance in the process of preventing malnutrition. But the promotional part of GMP did not spring immediately to the minds of the HEW's unless the interviewer brought up the topic.

As HE1 put it

“Well GMP is a routine follow-up of children's weight by using a weight scale. Measurement of children's weight is very important, and in that there is no doubt. the importance in my view will be beneficial to the child, mother and also for us. For the child it will help keep his health by the means of preventing him from under nutrition complications, for the mother well it will keep her updated about the health status of her child and also she will get the early warning signs of under nutrition so that she will correct her care and for the health professionals, monitoring a regular weight of children will serve as a preventive surveillance for early detection of malnutrition so that it will serve as a preventative measure”

The description of growth chart specifically the weight for age chart, as perceived by the HEW's, was quite in line with the standard definitions in the guidelines and on the health card itself. In general, all of them described it is a good sign if the plots on the growth chart goes up ward during multiple GMP visits and considered it a danger sign if it declines .all of them also agreed with the fact that GMP has a way of preventing malnutrition or early detection for the appropriate management or referral. For instance, HE2 put it like this

“If the curve of the growth chart keeps on increasing as the time goes by it will tell us the child is gaining weight and growing as expected and also indicates the unlikeliness of an illness, If the curve of the chart keeps flat over the months it indicates that there is no change of weight and that will make us advise the mother for an increased frequency and variety of food. the curve of the growth chart keeps on declining it will tell us that the weight is decreasing and that is not good so we check the z score to see if the child is malnourished or not if the weight is just decreasing we will advise her and if it is showing sign of malnutrition we will refer them to the health center ...”

## **Challenges for implementation of Growth Monitoring and Promotion**

### **Health post settings**

Necessary materials that are required to implement GMP should be present at health facilities especially in health posts which are more accessible to the community .A weight scale is the minimum and main requirement to conduct a proper growth monitoring, but unfortunately not all the health extension workers that were involved on the in-depth interview said the materials are all present. For instance, one interviewee (HE6) said

“The materials are usually found at the health center not at the health posts, since the health centers deal with different patients and many people the government give priority for them and also they provide them with the necessary equipment and materials, but as we don’t get attention as much as the health centers, the concerned bodies do not answer our request for material and other necessities”

HE1 also added

“The materials required to conduct GMP are not present here at this health post. as you can see the services we give at this health post are mostly vitamin A and deworming when it comes to children .Mainly, there is no weight scale here which is the most important material required for GMP and I think it is being neglected thinking that it is being given at the health center but the fact is most mothers prefer it to be here and they complain of the health center being too far. I personally also think that it is better if they give us the necessary materials so that we can start doing it here and it will save up time and effort too”

## **Training for health extension workers**

Even though all the health extension workers defined and explained what GMP is, it was also understood from the points they raised more trainings are required to keep them up to date and well informed so that they may not forget how the procedures are done and recorded appropriately

HE3

“The trainings are not that many, meaning they don’t usually provide trainings that often, but the trainings I have received so far are mostly about immunization and maternal care”

In addition, HE1 said

“Here there is no training. But at the woreda, I used to work at a rural area there was one but here there is none. The amazing thing here perceived by many about us, health extension workers, is that we are only there for water and sanitation and family planning so this is the main misunderstanding .if there has been more trainings for us we would be more motivated and equipped to do our job. The thing is the community living here at the urban area so crowded and there are so many poor people with children that are very vulnerable to malnutrition as I have seen firsthand and they need attention by giving them supplements and fortified foods and regular follow up.

## **Health staff condition**

Time and manpower are usually of the essence when it comes to giving service for a community particularly in our context to implement GMP. As it was understood from the HEW’s, because of workload most of them said they don’t have enough time and manpower to give all sort of health services including GMP to all those to which the services are intended for.

“... For sure there is not enough manpower here. Well this kebele is so huge for example it’s a combination of two kebeles and there was supposed to be 4 health extension workers but there is only two of us here but even my colleague is away for maternity leave and am overloaded “  
HE1

## **Community setting**

Regional health offices decision to close some of the health centers and divert all cares to select other health centers in order to use them as an isolation center for COVID19 patients. This decision has affected the workload of health care personnel's on specific site. Few health extension workers and one nurse working at GMP and immunization center added the issue of the current COVID19 outbreak on which it added a lot of stress and workload.

As HH4 stated

“The workload we are facing and lack of man power especially currently is so short because they have diverted all or most of the mothers to our center because of other centers being used for corona isolation center so we are so busy with handling them. We are unable to conduct the GMP session for each individual properly. By on side we have to take care of our self from corona and on the other, we have to give service to all, and people and it really has a huge impact on us”

## **Mixed schedule with immunization**

GMP is a program which should be delivered for the children on a regular schedule on monthly basis for everyone but in parts of health facilities in Debre Berhan it is being delivered in combination with immunization services and that is making it difficult to give the whole package appropriately since many mothers gather at the same day for immunization appointment.

HE2 stated “...the other thing concerning mothers is that they are fed up with the long que that is at the health centers for immunization so mostly they are requesting for it to be given here, u see the mothers think measuring weight as a part of the EPI not as its own independent service but still they want it here “

As a challenge and also concern HEW's also stated that GMP is not seen as important as immunization so discontinuing or missing their schedule was noticed. Additionally, the current issue of the COVID19 outbreak has put pressure on both the health facilities and the caregivers of children to discontinue the service because of fear.

“As I said before the mothers only come for immunization and after that they will stop coming and now, they don’t even come at all because of the pandemic disease COVID19. If we had all the manpower, we needed we would have at least go to their houses but now since we don’t also have that it’s causing a serious problem on the kids and also on the mothers” HE6

### **Supportive supervision and monitoring**

When a certain intervention is set out to be implemented in the community by the health care professionals it is recommended that the service is checked time to time weather its being done according to plan and the standards. One of those ways to do that is by doing a routine monitoring and supervision to those service areas unfortunately most of the HEW’s stated that they do not get that much of monitoring or supervision especially concerning GMP.HE4 stated that

“I don't think there is enough supervision and monitoring from concerned bodies to be honest especially concerning GMP they told us to do it but they do not check whether we do it or not frequently. Mostly we report to the coordinators in the corresponding health centers and those are just numbers”

## 6. DISCUSSION

This study was aimed to assess caregiver's knowledge and utilization of GMP services for children under two years age. It was found that knowledge and utilization of GMP was low in the study area. Factors like educational status, information about the service and counseling were found to be associated with knowledge of GMP Whereas knowledge about GMP, place of residence, child age, family size and distance from health facility were associated with higher odds of utilization of GMP. HEW's were also found to be facing challenges of workload, lack of logistics and training to update themselves.

This study revealed the knowledge of caregivers about GMP to be low. When this was compared to two cross-sectional studies conducted in Ghana (33,35), it is much lower. Furthermore, this study revealed that more than half of caregivers described GMP as a form or part of the immunization process while less than half of them described it correctly as a weighing process. On the other hand in a study in Ghana (33), 70.3% caregivers expressed the meaning of GMP as a weighing program whilst 26.7% related it as immunization. The discrepancy might be because of the study area, meaning this study was a community based study while the study in Ghana was institutional based study on which the participants might have come to the health facility for GMP purposes, which increases the likelihood of their positive perception about GMP.

Sixty percent of the caregivers were found to have poor knowledge about the growth chart used for GMP which indicates that the health professional's main focus was to measure weight and find out the nutritional status of the children while they should have explained and discussed the results with the caregivers of the children. In addition, it was also found that the main reasons for caregivers to visit the health facility were for vaccination reasons rather than for GMP. This problem was also noticed and supported by (13,31,32). The reason for this may be in the studies some health facilities used to give GMP together with immunization services which may mislead the caregivers in thinking GMP as part of the immunization process or the growth chart was considered for mainly diagnostic purposes rather than being plotted and thought to the mothers. The other reason may be due to health professionals increased workload, which takes up more time to discuss the whole thing with each individual, leading them to only measure and record the result.

Level of education for the caregivers was significantly associated with knowledge for GMP. Illiterate caregivers were three times less likely to have knowledge about GMP than those who attended secondary or above level of education. Similar finding was also noted by a study in Ethiopia and a community based cross-sectional study in Kenya (17,26). This can be explained by the fact that literacy will make caregivers be able to read and comprehend information from different sources including the one in the health card which likely increases their knowledge about GMP.

Caregivers who has said the status of their child, including the weight, have been briefly explained to them after every GMP measurement session were found to be more knowledgeable about GMP than those who said they didn't get any information. This can be explained by the finding from the qualitative part of this study showing most of the HEW's challenge, as reported, was shortage of manpower leading to lack of time to address the community with all the extension packages by the outreach activity. The huge workload that the health professionals are facing also adds in shortages in time and staff to explain all things in details (16). Similarly workload was the same reason put out by health care providers from Ethiopia and South Africa for not plotting the growth chart with the children's weight result (16,25). Additionally, as reported by a study that assessed awareness of GMP among an international district medical officers, the reason can again be attributed to the assumption that the health professionals might just be using the GMP chart as a tool to only diagnose the nutritional status instead of using it to explain to mothers (31).

Likewise, those who confirmed that there is a nutritional counseling and education at the health facility they visited were found to have a good knowledge about GMP than their counter part. This finding was also similar to a study in Ethiopia(26) and South Africa(36). The reason for this might be because, since GMP is integrated in the module of nutritional education and counseling (30), those who took part in the counseling and education sessions might have a great chance to hear about GMP than those who didn't.

This study revealed the utilization of GMP was 13.4%. This number is considerably lower when compared with a study in Kenya 53.3% (17) and cohort study conducted in Rwanda which found the average utilization rate over three years to be between 75-79% (27). The reason might be because of the difference in study design and operational definitions in which the criteria to identify utilization of GMP is used.

Unlike the difference in utilization level with the above studies, the utilization of GMP in this study was also found to be low or less than 50% with studies conducted in Indonesia 30.2% (22), 11% and 16.9% from two findings from Ethiopia (13, 25). The reason for the low level of utilization in these studies might be due to similar study design and similar health policy and as it is also supported by findings of (23, 14). As per findings of the qualitative part of this study, HEW's raised the point that necessary materials like (weight scales, family health care cards, stationary materials and also absence of pamphlets) that are required to implement GMP are not present at health facilities especially in health posts; this could explain the low level of GMP utilization. In addition, another study carried out in Eastern Mediterranean region also pointed out tangible constraints like lack or poor condition of weighing scales with lack of either maintenance or timely replacement that was reported in 4 countries to affect GMP utilization (23).

According to the result of the study, residents who lived on the rural side of the city were found to be more likely to utilize GMP than those who resided in the urban side of the city. This appeared to be in contrary with a study done in Kenya in which the urban area were found to have a higher coverage than that of the rural part of the area (18). This might be due to time and NGO's investment. According to a recent review on the benefaction of non-governmental aid organizations in addressing the shortage and workload of healthcare workers, it was found that they are having a detrimental effect in improving healthcare service quality by also reducing workload more in rural areas than urban (37). This was also supported by the finding of qualitative part of the study in which the HEW's said the rural part of the area gets more material and logistic support from the NGO's.

This study revealed children whose age was less than 11 months was more likely to utilize GMP as compared to the 18-23-month age group. This finding was also in line with the finding of the Kenyan study (18). With support of findings from the qualitative part of this study, the reason for

that might be attributed to caregiver's main reason to visit the health facility being immunization and with the perception of the major phases of vaccination ending in less than a year so mothers might not prioritize coming for GMP after completion of immunization.

Children's with whom there was larger number of family members were less likely to utilize GMP than those with smaller number of people living together in the household. This finding was also similar to another study in southern Ethiopia which found family size to be inversely related with utilization of GMP (13). This is supported by findings of a cross-sectional study from India(38) which found increased size of the family as a restraint for standard child health care as a result of increased workload.

In study conducted in Kenya mothers of higher economic status were more likely to utilize GM because they could afford transportation cost to further located health facilities (17). Another study in Ethiopia found that mothers who had to travel for less than an hour were found to be more knowledgeable (25). This study also found that those who said it would take them an hour or more to reach the nearest health facility were less likely to utilize GMP. A possible explanation for this would be the transportation cost constraints to always attend the sessions and the further they were from the health facilities the harder it would also be for the HEW" to reach the family.

Positive relationship between knowledge Mothers' child feeding and growth chart knowledge was also predictor of GMP utilization in studies from Ghana and Kenya (17,39). Likewise, this study and another study conducted on the southern part of Ethiopia a while ago found association of knowledge about growth monitoring and promotion to do with utilization of GMP(25). Possibly indicating that the more knowledge the caregivers had about what GMP is and its possible benefits, the more willing they get to utilize the service. As caregivers' knowledge about GMP is supposed to be received from HEW's, the HEW's needs to get trainings to continuously update themselves. Unfortunately as we understood from the in-depth interview, there is no or little training being given to the HEW's, this was also reported by a study from South Africa in which various barriers were said to affect the implementation of nutrition interventions which are poor staff knowledge and skills owing to lack of trained staff (16). This could be due to the fact that there are financial constraints or lack of priority given to this issue by the concerned bodies of the Government.

In addition to trainings for HEW's, supervision and monitoring are key factors to ensure the continuity of a standard health care. If there is weak monitoring and supervision programs will perform weakly and would lead to undesirable results in programs like GMP (28).when asked if there was enough supervision or monitoring concerning the implementation of GMP the HEW involved in the qualitative part of this study said there is little to none of that. This could be because since the coordinators who are supposed to do the monitoring and supervision are nurses working in health centers, they might be too busy to go out to health posts and conduct supervision.

## **7. CONCLUSION**

Ethiopia is among the countries who are putting an effort to improve and promote a healthy growth of children by conducting activities both at the health facilities and down at the community level. Unfortunately, with less than half of respondents having adequate knowledge and utilization of GMP, the results showed the sector is still being challenged and remained unable to bring about plausible results. Factors associated with knowledge of GMP by caregivers were level of education, explanation about weight and presence of nutritional counseling and education. Whereas knowledge about GMP, place of residence, index child age, family size and distance from health facility were associated with utilization of GMP. HEW's are facing challenges of workload, lack of logistics and training to update themselves which was the possible reason for low knowledge and utilization of GMP by the caregivers.

## 8. RECOMMENDATIONS

Based on the results of the study, the following recommendations are put forth to the concerned bodies of different sectors

### **For the city health office planners and policy makers**

- Providing all the necessary equipment's needed for the implementation of GMP for each and every health post located on both urban and rural side of the city.
- Supportive supervision and timely monitoring should be done at the sites where GMP services are provided in order ensure the proper implementation of GMP
- Timely and regular trainings must be delivered to the health extension workers so that they could keep themselves updated in giving a quality health care.
- Making the health posts and HEW's more addressable to the target community or encourage a method in which the HWE's could go visit far located households to deliver health services and awareness creation on the regular basis.
- Plan to separately deliver GMP than with immunization so that caregivers wouldn't stop coming after the vaccination is over.

### **For non-governmental organization**

- Allocate proportional logistic aid and training to health posts and health centers located both the rural and urban areas.
- Emphasize and engage more on the promotional aspect of GMP like nutritional counseling and education to create more awareness of caregivers about GMP as it was found to be associated with utilization.

### **For researchers**

- Additional studies should be done to assess care givers attitude and associated factors towards growth monitoring and promotion.

## **9. STRENGTH AND LIMITATION**

The strength of this study is application of qualitative method in addition with quantitative methods helped to assess not only caregivers but also challenges faced by HEW's when implementing growth monitoring and promotion so that it would supplement the data and increases the validity. However, recall bias of caregivers when assessing their knowledge towards GMP and utilization is worthy of acknowledgment as a limitation of this study.

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## 11. APPENDIX

### Annex 1 Consent Form (English version)

I am.....Who is here on behalf of Fuad Ahmed a pediatrics and child health nursing student of Addis Ababa University. He is conducting a research on ' **caregiver's knowledge and utilization of growth monitoring and promotion for under two years children**' in Debre Berhan, for the partial fulfillment of master's degree for pediatrics and child health in Addis Ababa college of health sciences. He has permission from Addis Ababa University College of health sciences and the health office administrators of Debre Berhan to conduct this study.

The main goal of this study is to assess knowledge and utilization of growth monitoring and factor affecting it. It will help in generating a base line data for policy makers and fellow researchers concerning growth monitoring and promotion. It will also helping you to practice the appropriate child feeding practice and nutritional care of your child.

You are selected on random for this study because you are a mother or care giver of a child age less than 2 years old. You have the right either to participate or decline your participation. If you are willing 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 will not be at any risk or harm by Participating in this study. Whether you are willing, refuse or decide to withdraw later, you will not be ill-treated in any way. If you agree you will be asked to reply to questions about yourself, your child growth and feeding knowledge and your growth monitoring and promotion service utilization. The interview will not take more than half an hour.

Confidentiality will be strictly kept to any information that you provide, names and all the questionnaires will be coded for anonymity. Only the principal investigator will know the details and will discard it after completing analysis. The data will not be used for purposes other than the study. Contact details of principal investigator and the person to whom to contact at any time for further explanation.

Name of principal investigator: Fuad Ahmed

Cell phone No – 0910633161

## Annex 2: Informed consent

Due to the fact that the information that was read to me was clear i have been given a chance to ask doubts and my questions have been answered to my satisfaction. My participation in this study is voluntary. I understand that my confidentiality will be kept and that I can leave at any time of the process. I understand that no harm or risk will come to me whether I decide to leave the study or not.

Agree to participate?

YES

No

1. If yes, continue the interview

2. If no, skip to the next person by writing reasons why.

---

Relation of the respondent to the child \_\_\_\_\_

Respondent's signature/thumb print \_\_\_\_\_ Date \_\_\_\_\_

Interviewer: Name \_\_\_\_\_ Signature \_\_\_\_\_

Questionnaire ID number \_\_\_\_\_

Date of interview \_\_\_\_\_ Time completed \_\_\_\_\_

Result of interview:

1. Complete
- 2.
3. Absent
4. Denied permission
5. Incomplete

Supervisor: Name \_\_\_\_\_

Sign \_\_\_\_\_

### Annex 3 English version questionnaire

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

Questionnaire No \_\_\_\_\_ Kebele \_\_\_\_\_ House number \_\_\_\_\_

<b>Part 1-Socio demographic characteristics of the child</b>			
S.no	Questions	Response	Skip
1	Sex of the child	1. Male 2. Female	
2	Age of the child	1. 0-5 month 2. 6-11 month 3. 12-17 month 4. 18-23 month	
3	Has the child received immunization at least once?	1. Yes 2. No	
<b>Part 2: Socio demographic characteristics of caregivers</b>			
s.no	Questions	Response	Skip
4	Age of the mother in completed Year?	1. 15-19 2. 20-24 3. 25-29 4. 30-34 5. 35-39 6. >40	
5	Religion?	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Others(specify)_____	
6	Ethnicity?	1. Gurage 2. Oromo 3. Amhara 4. tigris 5.Others specify _____	

7	Level of education	<ul style="list-style-type: none"> <li>1. Illiterate</li> <li>2. Read and write</li> <li>3. Primary</li> <li>4. Secondary and above</li> </ul>	
8	occupational status	<ul style="list-style-type: none"> <li>1. Housewife</li> <li>2. Farmer</li> <li>3. Merchant</li> <li>4. Government employee</li> <li>5. Private employee</li> <li>6. Student</li> </ul>	
9	What is your current marital Status?	<ul style="list-style-type: none"> <li>1. Married</li> <li>2. Single</li> <li>3. Divorced</li> <li>4. Widowed</li> </ul>	
10	What is the educational status of your husband?	<ul style="list-style-type: none"> <li>1. Illiterate</li> <li>2. Read and write</li> <li>3. Primary</li> <li>4. Secondary and above</li> <li>5. other(specify)_____</li> </ul>	
11	What is the occupation of your Husband?	<ul style="list-style-type: none"> <li>1. Farmer</li> <li>2. Merchant</li> <li>3. Government employee</li> <li>4. Private employee</li> <li>5. Daily laborer</li> <li>6. Student</li> <li>7. Others(specify)_____</li> </ul>	
12	Household average monthly Income	_____Birr	

13	Source of water supply	<ol style="list-style-type: none"> <li>1. Piped water</li> <li>2. Bore hole</li> <li>3. Unprotected well</li> <li>4. Protected spring</li> <li>5. River</li> </ol>		
14				
15	Number of people living in the household (family size)	<ol style="list-style-type: none"> <li>1. Less than 5</li> <li>2. More than 5</li> </ol>		
16	Does the child have any siblings?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>		
<b>Part 3. Source of information</b>				
1	Which one of the following media does your family use?	<ol style="list-style-type: none"> <li>1. Radio</li> <li>2. Television</li> <li>3. Internet</li> <li>4. HEW's</li> <li>5. Family members or friends</li> </ol>		

Part 4: knowledge Questions of Mother child feeding practices			
S.no	Questions	Response	Skip
1	What does GMP mean to you?	1.Weighing 2. immunization 3.Treatment of ailment 4. do not know 5. Others specify _____	
2	What is the importance of GMP?	1. Acquire knowledge on childcare 2. Improve on childcare practices 3. Do not know 4. Others specify	
3	How frequent is a mother expected to attend GMP session?	1. Once in month 2. Twice in a quarter 3. Do not know 4. Other specify	
4.	What is this growth chart used for? (SHOW THE CHART)	1. Monitor growth 2. Do not know 3. Others specify	
5.	In your own opinion, when should a mother initiate breast feeding and for how long should it be exclusively given	1. Up to one week 2. Up to 6 months 3. Up to 9 months 4. Do not know	
6.	In your own opinion, when should a mother initiate complimentary feeding	1. At 6 months 2. Do not know 3. Others specify	
7.	How many times are you expected to breast feed a child that is 0-6 months?	1. On demand 2. Do not know 3. Other specify	
8	How many times are you expected to feed a child within 6-11 months in a day?	1. 3 times or more 2. Do not know 3. Others specify	
9	How many times are you expected to feed a child within 12-23 months in a day?	1. 4 times or more 2. Do not know 3. Others specify	
10	What does it mean for a child when the curve on the growth chart is going downwards?	1.Child is not growing well 2.Child maybe sick/has been sick and is in danger 3. Child is eating well	

		4. Do not know 5. Others specify	
11	What does it mean for a child when the curve on the growth chart is flattening?	1. Child's weight is increasing 2. Child is healthy and growing well 3. Child needs attention and follow up 4. Do not know 5. Others specify	
12	What does it mean for a child when the curve on the growth chart is rising?	1. Child's weight is decreasing 2. Child is healthy and growing well 3. child is not eating well 4. Do not know 5. Others specify	
13	Total knowledge score of the caregiver	_____	

<b>Part 5: caregivers growth chart knowledge and utilization</b>			
s.no	Questions	Answer	Skip
14	Does the caregiver have the child's health card ?	1. Yes                      2. No	
15	Is the child's weight marked on the growth chart?	1. Yes                      2. No	
16	Do you know that taking your Baby weigh regularly has benefit for your child?	1. Yes 2. No	
17	Have you missed your appointments / interrupted your follow up ? if so why	1. Forgotten 2. Too busy 3. No 4. Others specify	
18	What is the benefit of taking your Baby weight regularly?	1.to monitor the child growth 2. to know if my child is healthy 3.to seek for medical care 4. to know if the child is ill or not 5.other(specify)_____	
19	<b>Overall caregivers utilization of GMP</b>	1. There is utilization 2. There is not enough utilization	

Part 6: Health care service characteristics			
s.no	Question	Response	Skip
20	Is there health facilities available around your home	1. Yes 2. No	
21	Place of delivery	1.home 3. 2.health facility	3
22	How far is the nearby health institution from your house? (In terms of hours it takes to reach on foot)	1. Less than an hour 2. More than an hour	
23	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 _____)	
24	Have ever received an advice from Health worker about the health of your child?	1. Yes 2. No	
25	Where do you usually get health service for your child usually?	1.health center 2. health post 3.private clinic 4.other (specify _____)	
26	Is growth monitoring and promotion service available for your child?	1. Yes 2. No	
27	Do you get enough explanation about the child's weight after the weight is measured?	1. Yes 2. No	
❖	According to your experience, what type of service offered in health facility?		

	27. Weighing	1. Yes	2. No
	28. Nutrition counseling/education	1. Yes	2. No
	29. Immunization	1. Yes	2. No
	30. Treatment of diseases	1. Yes	2. No
	31. plumpy nut/ powdered milk	1. Yes	2. No
	32. vitamin A supplementation	1. Yes	2. No
<b>Part 7 other factors</b>			
1	Does your husband supports and encourage you to take the child to to attend GMP sessions?		1. Yes 2. No
2	Do you fear of shame thinking the results of the growth monitoring would be bad?		1. Yes 2. No
3	Do you believe or fear the child will be exposed to bad air or evil eye when clothes are taken off for the monitoring purposes?		1. Yes 2. No
4	If yes to previous question (9) Would that prevent you from taking the child to GMP?		1. Yes 2. No

**Annex 4 Consent Form for In Depth Interview (English version)**

Health institution – Health post

Code of the health post\_\_\_\_\_

My name is Fuad Ahmed and I am conducting out a thesis to assess knowledge and utilization of growth monitoring and promotion for caregivers/mothers of under 2 years old children on Debre Berhan residents 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 recording the session because I don't want to miss any of your comments. Please try to speak up so that you will be heard clearly your comments.

All responses will be kept confidential meaning that your responses will only be shared with research team and you can rest assured that any information we include in our report does not include your identity in any way .you can end the interview at any point in time during the interview .

Do I have your permission and willingness to continue?

Yes

No

Thank you!

**Annex 5 Sample interview guide for in-depth interview (English version)**

Code of the health extension worker \_\_\_\_\_

Age \_\_\_\_\_ sex \_\_\_\_\_

Questions	Response
<p><b>Main questions</b></p> <p>1 How do you describe the meaning of growth monitoring and promotion mean to you?</p> <p><b>Sub question</b></p> <p>A. Could you help me understand the purpose of the growth chart?</p> <p>B. Do you think it is important? If so In what way?</p> <p>C. What do you say about GMP preventing malnutrition?</p>	<p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• As a prevention activity</li> <li>• As a promotion activity</li> </ul>
<p><b>Main question</b></p> <p>2 How do you think is GMP implemented?</p> <p>3. How do you describe the growth chart of the child</p> <p><b>Sub question</b></p> <p>A. What possible actions do you think is taken for undesirable results?</p>	<p><b>Probe</b></p> <ul style="list-style-type: none"> <li>• Weight</li> <li>• Height</li> <li>• Age</li> </ul> <p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• Curve on the growth chart is falling</li> <li>• Curve on the growth chart is rising</li> <li>• Curve on the growth chart straight</li> </ul>

<p><b>Main question</b></p> <p>4 What can you mention as a challenge encountered at the health post in implementing GMP?</p> <p><b>Sub question</b></p> <p>A. Do you think the on job trainings you get are enough?</p> <p>B . Do you get enough supervision and monitoring from concerned bodies?</p> <p>C Are the materials required for implementing GMP always available?</p>	<p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• types of training</li> <li>• benefits of the trainings</li> <li>• Impacts of the supervision</li> <li>•           Type materials are available and which are not</li> </ul>
<p>D Do you think there is enough man power and enough time to conduct the both the monitoring and promotion aspect of growth?</p> <p>E What other challenges can you mention for its implementation?</p> <p><b>Main question</b></p> <p>5 . What are the common complaints of caregivers missing the GMP session?</p>	<p><b>Probe :</b></p> <ul style="list-style-type: none"> <li>• Number of HEW's present at the health post</li> </ul> <p><b>Probe :</b></p> <ul style="list-style-type: none"> <li>•           Possible recommendations to answer those complaints</li> </ul>

**Annex 6 Amharic version of the questionnaire**

በአዲስ አበባ ዩኒቨርሲቲ ህክምና ፋክልቲክ ሁለተኛ ደረጃ ስልጠና ለህፃናት ክትብደት አለ ካክን በተመለከተ ( የህፃናት ዕድገት ስርዓት ለማሳደግ የሚያስፈልጉት )

ምን ያህል ተጠቃሚዎች እና ቶች እንዳሉና የግንዛቤ መጠንን በተመለከተ የጥናታዊ መረጃ መሰብሰቢያ መጠይቅ

የመጠይቁ ቁጥር ..... ቀበሌ ..... የቤት ቁጥር .....

**ክፍል 1- ሕፃናትን በተመለከተ መረጃ**

- 1. የሕፃናት/ፈጣሪ ስም? ሀ. ወንድም ስም
- 2. የሕፃናት/ፈጣሪ ደረጃ (በወር) .....
- 3. ሕፃናት/ፈጣሪ የተወለደበት ቦታ? ሀ. በቤት ወይስ ጥለ. በጠፍተኛ ስጦታ
- 4. ከትባትባ ትንሹ አንድ ደረጃ ወይስ ያልተገኘ? ሀ. አዎ ለ. አለ ወይስ ደም/ችም

**ክፍል 2- የሕፃናት እና ት/አሳዳጊ በተመለከተ አጠቃላይ መረጃ**

5. የእናት የወ/አሳዳጊ ደረጃ .....

6. ሐይማኖት/ሽምን ድንኳን ወይስ?   
ሀ. ኦርቶዶክስ ለ. ማስሊክ ጥ. ፕሮቴስታንት ም. ካቶሊክ ሠ. ሌላ ካለ (ይጠቁሱ).....

7. ብሔር/ሽምን ድንኳን ወይስ?   
ሀ. ጉራጌ ለ. ኦሮሞ ሐ. አማራ ም. ትግሬ ሠ. ስልጠፊ ሡ. ሌላ ካለ (ይጠቁሱ) .....

8. የትምህርት ደረጃ ስም/ሽም?   
ሀ. ያልተማረ/ች (ማንበብና መጻፍ ስሜት/ት) ለ. መጻፍና መንበሥ

ሐ. 1ኛ ደረጃ ም. 2ኛ ደረጃ እና ከዛ በላይ

9. የሥራ ስም/ሽም?   
ሀ. የቤት ዕድገት ስርዓት ለ. ገበሬ ሐ. ነጋዴ ም. የመንግስት ስራ ሠ. የግል ስራ ሡ. ተማሪ

10. የጋብቻ ስም/ሽም?   
ሀ. ያገባ/ች ለ. ያላገባ/ች ሐ. የተፋታ/ች ም. የትዳር አጋር የሞተበት/ባት



ሀ. እስከ 1 ሳምንት ለ. እስከ 6 ወር ለ. እስከ 9 ወር 4. አላ ወቅም

6. ለህፃኑ/ኗ ተጨማሪ ምግብ ወይም ማጠጥሻ ወይም ወሽጭ ማሰባሰቢያ?

ሀ. በ 6 ወር ለ. አላ ወቅም ለ. ሌላ ካለ ይጠቀስ

**ለ ማክተሎት የ እድሜ ልሳሎች ህፃኑ/ኗ ምን ያህል ጊዜ በቀን መጣ ብእን ዳለበት/ባት ግለፁ**

7. 0-6 ወር ሀ. እንዳስፈለገ ወለ. አላ ወቅም ለ. ሌላ ካለ ይጠቀስ

8. 6-11 ወር ሀ. ከ 3 እና ከዛ በላይ ለ. አላ ወቅም ለ. ሌላ ካለ ይጠቀስ

9. 12-23 ወር ሀ. ከ 4 እና ከዛ በላይ ለ. አላ ወቅም ለ. ሌላ ካለ ይጠቀስ

**ክፍል 4- ከዚህ በታች ላሉት ጥያቄዎች የህፃናትን የእድገት መከታተያ ሠንጠረዥ ሽያጭ መጠየቅ (እየተመለከቱ መልሱን ይመሉ)**

1. የእድገት ሠንጠረዥ ሽያጭ ለወመከ መርዝቅ እያለ ከመጠየቅ የሳያል?

ሀ. በቀይ ሆነ ከብደት አለ ለ. ሕፃኑ ጠፍቶ ይሆናል ለ. ሕፃኑ በአግባቡ እየተመለከተ መሆኑን

መ. አላ ወቅም ለ. ሌላ ካለ (ያጠቀስ).....

2. የእድገት ሠንጠረዥ ሽያጭ ለወመከ መርዝቅ ተመሳሳይ እያለ ከመጠየቅ የሳያል?

ሀ. ከብደት እየጨመረ እንደሆነ ለ. ሕፃኑ ጠፍቶ ይሆናል ለ. ሕፃኑ ከትኩረት እንደሚቆይ ስፍልገው

መ. አላ ወቅም ለ. ሌላ ካለ (ያጠቀስ).....

3. እድገት ሠንጠረዥ ሽያጭ ለወመከ መርዝቅ ከፍተኛ ሆነ ምን ያሳያል?

ሀ. ከብደት አለ መጨመሩን ለ. ሕፃኑ በጥሩ ደንቅ ትላይ መሆኑን ለ. ሕፃኑ በአግባቡ እየተመለከተ መሆኑን መ.

አላ ወቅም ለ. ሌላ ካለ (ያጠቀስ).....

➤ የአሳዳጊ የግንዛቤ ወጠቻ...../12

**ክፍል 5- ስለ ሕፃናት ከብደት መለካትና አመገብ ብ( እድገት ከትኩረት ማስፈለግ )**

**ግንዛቤ እና በአገልግሎት ለወክሎታቸው**

1. ህፃኑ የጠፍቶ ካርድ አለው? ሀ. አለ ለ. የለም

2. የልጅ ከብደት በከብደት ስንጠረዥ ለምልክት ተደርጎ በታል? (የህፃኑን የጠፍቶ ካርድ ይያይዛል) ሀ. አለ ለ. የለም

3. ልጅሽበየ ወሩበቋሚ ትኩብደቱመላካቱጠቃሚን ደሆነ ታወቂያለሽ? ሀ. አዎላ. አይ

4. ከተቋረጠላምን ተቋረጠ? .....

5. የ ልጅክብደትመላካትእና መከታተልጥቅመምን ድንነ ወ?

ሀ. የ ልጁን ክብደትና እድገት ሁኔታ ለመቆጣጠር ለ ልጁጠኔ ፍመሆኑን ለማወቅ

ሐ. አስፈላጊ ወንድም የህክምና ዕርዳታ ለማግኘት ለ ልጁጠኔ ፍመሆኑንና አለመሆኑን ለማወቅ

ሠ. ሌላካለ (ይጠቀስ).....

➤ ህፃኑ/ኗ የ ክብደት ልኪት እና አመጋገብ ብትምህርት ያለው ተሳትፎ

(በጥቂቱ 1 ጊዜ እስከ 1 ወር ላለ ልጅ) (2 ጊዜ 1 እስከ 3 ወር) (በጥቂቱ 5 ጊዜ ላለ 4 እስከ 11 ወር ላለ ልጅ)

ሀ. በቂ ተሳትፎ አለላለ. በቂ ተሳትፎ የለም

**ክፍል 6- የ ጠፍ አገልግሎት ሁኔታ በተመለከተ**

1. በመኖሪያ ቤት አቅራቢያ ችሎታዎ ጠፍ ተቋም አለ?

ሀ. አዎላ. የለም

2. በእግር ምን ያህል ያስኬዳል? ..... ስአት ..... ደቂቃ

3. አብዛኛውን ጊዜ ልጅሽን ለምን ድንነ ወወደ ጠፍ ተቋም ምትወስኛው?

ሀ. ክብደት ለማዘለካት ለ. ከጠፍ ባለሙያ የሕፃናት አመጋገብን በተመለከተ ለተምክር ለማግኘት

ሐ. ለክትባት ለ. ሲታመሙ ለማዘክም

ሠ. ቫይታሚን ኤ (ጠቢታ) ለማግኘት ለ. ሌላካለ (ይጠቀስ)

4. ከዚህ ቀደም ሲል ሕፃኑ/ኗ ጠፍ ምክር ክባለሙያ አግኝተው ወቃሉ?

ሀ. አወቃለ ወላ. አላወቅም

5. አብዛኛውን ጊዜ ለህፃኑ/ኗ የ ጠፍ አገልግሎት የምታገኝ ወይ ትነ ወ?

ሀ. ጠፍ ጣቢያ ለ. ጠፍ ኬላሐ. የግል ክሊኒክ ለ. ሌላካለ (ይጠቀስ).....

6. የሕፃናት እድገት ትኩረት ለማስጠበቅ ለጠቅላላ ለግሎት ታገኛለሽ?

ሀ. አዎላ. የለም

7. የሕፃኑ/ክብደትከተለካበቅልስለክብደቱሁኔታማበራሪያ/ትምህርትከጠፍባለመቆያገገኛሉ?

ሀ. አዎሊ. የለም

ጥያቄ: -7.በጠፍተቋምወስጥየሚኖሩአገልግሎቶች

1.ክብደትመለካት?ሀ. አለሊ. የለም

2. ልጅሽእንዴትመጣብእንዳለብሽምክር/ትምህርት? ሀ. አለሊ. የለም

3. ክትባት? ሀ. አለሊ. የለም

4. የህክምናአገልግሎት?ሀ. አለሊ. የለም

5. ጥላንጊነት/ዳቄት/ወተት? ሀ. አለሊ. የለም

6. ቫይታሚኔ (ጠባቂ) ክትባት (በየ6ወርየሚሰጥክትባት)? ሀ. አለሊ. የለም

8. የትዳርአጋርወይምየቤተሰብአባልህፃኑየክብደትልኪትእናአመገብትምህርትፕሮግራምእንዲሳተፍ ያበረታቱሻል/ካል?

ሀ. አዎሊ. አያበረታቱም

9. የልጁክብደትመጠንአነስይሉኛልብለወፈርተወልጁንወደጠፍተቋምከመወሰድተቆጥበወያውቃሉ?

ሀ. አውቃለወለ. አላውቅም

10. ልብስተወልቆመለካትበእርሶለይፍራቻ(የሰወአይን፣ በዳ፣ ምቶ) አሳድሮበትወደጠፍተቋምእንዳይሄዱሆኖያውቃል?

ሀ.አዎሊ. አያውቅም

11. የስራጭ መበዛትየክብደትልኪትእናአመገብትምህርትእንዳይሳተፉአግዶትያውቃል?

ሀ.አዎሊ. አያውቅም

Annex 7 ; Sample of WHO growth monitoring standardized chart

