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GROWTH MONITORING AND PROMOTION PROGRAM FOR IMPROVING DIETARY DIVERSITY OF INFANTS: EVIDENCE FROM PERFORMANCE MONITORING FOR ACTION- ETHIOPIA STUDY

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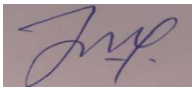
Tsegaye Demissie (PhD)	Assoc. Prof.		30/07/25
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Acronyms and Abbreviations

AAU	Addis Ababa University
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CBN	Community Based Nutrition
CI	Confidence Interval
DHS	Demographic Health Survey
EA	Enumeration Areas
EDHS	Ethiopian Demographic Health Survey
GM	Growth Monitoring
GMP	Growth Monitoring and Promotion
IYCF	Infant and Young Child Feeding
JHSPH	Johns Hopkins University Bloomberg School of Public Health
LMIC	Low and Middle- Income Countries
MCH	Maternal and Child Health
MDD	Minimum Dietary Diversity
MoH	Minister of Health
MUAC	Mid-Upper arm Circumference
NNP	National Nutrition Program
NNS	National Nutrition Strategy
ODK	Open Data Kit
PMA	Performance Monitoring for Action
PNC	Postnatal Care
RE	Resident Enumerator
RMNH	Reproductive, Maternal and Newborn Health
SD	Standard Deviation
SDG	Sustainable Development Goal
SDP	Service Delivery Point
SNNP	Southern Nations, Nationalities, and Peoples
SNNPR	Southern Nations, Nationalities, and Peoples Region

SPH	School of Public Health
SSA	Sub-Saharan Africa
SSB	Sugar and Sweetened Beverages
TOT	Training of Trainers
UNICEF	United Nations International Children's Emergency Fund
VIF	Variance Inflation Factor
WB	World Bank
WHO	World Health Organization

Abstract

Background: Child malnutrition and inadequate feeding practices continue to be significant challenges in Ethiopia. The Growth Monitoring and Promotion (GMP) program aims to address these concerns by empowering mothers to provide appropriate childcare. Despite the program's longstanding implementation in Ethiopia over sixteen years as nutrition specific intervention to prevent malnutrition, there is limited data and understanding of its effects on child feeding practices. The study examined the role of GMP in improving dietary diversity of infants aged 6 to 12 months in selected regions of Ethiopia.

Methods: A weighted community-based retrospective cohort study was conducted from January 2024 to May 2025 using secondary data from the PMA-Ethiopia panel survey. A weighted sample size of 915 children's with complete dietary diversity data at one year postpartum follow up survey were included in this study. Data was cleaned and analyzed using STATA version 18. A longitudinal panel survey design-based bi-variable and multivariable logistic regression analysis was used to determine the role of GMP in improving dietary diversity of infants, while controlling for possible confounders. Adjusted odds ratio (AOR) alongside 95% confidence intervals (CIs) was estimated to measure the strength of the association between variables of interest.

Results: In this study, only 29.2% of mothers (95% CI: 24.7%, 34.0%) reported utilizing GMP services for their child since delivery, and just 18.5% of infants (95% CI: 14.7%, 23.1%) achieved the minimum recommended dietary diversity. Utilization of GMP services was not significantly associated with dietary diversity both in the bivariate and multivariate analyses [AOR: 0.96(0.85, 1.50); p=0.846]. Although a slightly higher proportion of children who participated in GMP had sufficient dietary diversity, the difference was not statistically significant.

Conclusion: This study found a low prevalence of adequate dietary diversity among infants, with no statistically significant association between participation in GMP services and achieving minimum dietary diversity. The findings underscore the need for quality nutritional counseling and sustained behavior change communication alongside GMP services.

1. Introduction

1.1. Background

As infants grow, when breast milk alone no longer meets their nutritional requirements, the introduction of complementary foods becomes necessary. This transition, known as "complementary feeding," usually takes place between the ages of 6-24 months when infants begin to incorporate family foods into their diet. It is during this critical period that children are particularly vulnerable to malnutrition (1).

Based on the updated World Health Organization (WHO) guidelines, The proportion of children aged 6–23 months who consumed foods and beverages from at least five of the eight food groups over the previous day has been defined as minimum dietary diversity(2). These food groups are (1) breast milk; (2) grains, roots, and tubers; (3) legumes and nuts; (4) dairy products; (5) flesh foods (meats/fish/poultry); (6) eggs; (7) vitamin A-rich fruits and vegetables; and (8) other fruits and vegetables. A minimum dietary diversity (MDD) is essential to ensure appropriate growth and development for infants and children aged 6–23 months. Without adequate diversity and meal frequency, infants and young children are vulnerable to malnutrition, increased risk of chronic diseases, morbidity, and mortality. According to the WHO, undernutrition is linked with 45% of child deaths worldwide (3).

Childhood undernutrition and poor feeding practices are major public health concerns, particularly in low and middle- income countries (LMIC). Globally, few children receive nutritionally adequate and safe complementary foods, and in many countries, less than one-fourth of infants between the ages of 6 and 23 months meet the criteria of dietary diversity and age appropriate feeding frequency (3). Ethiopia, a country in the Horn of Africa, has serious problems with the growth and nutrition of its children. Ethiopia continues to have high rates of infant and child malnutrition; 39% of children under five suffer from stunting (4), which is indicative of chronic undernutrition and stunted growth and development. Inadequate dietary diversity is one of the key contributors to this issue, emphasizing the urgent need for effective interventions to improve the nutritional status of infants. In Ethiopia, just 8% of children between the ages of 6 and 23 months have an adequately diverse diet , consuming five of the eight food categories.(4).

Growth monitoring and promotion programs have been identified as key strategies in addressing and combating malnutrition and illnesses at an early stage among infants and young children (5,6). Additionally, it contributes in reducing child mortality rates, thus facilitating the attainment of sustainable development goal 3 (SDG3) (7).

GMP has been in use around the world since the 1980s. And 178 countries use growth monitoring and promotion as an entry point for preventive care and essential child health, nutrition and development services(8). Its primary benefits are to: promote optimal breastfeeding and appropriate complementary feeding for mothers, families, and health workers; facilitate regular contact between infants and young children and primary health care facilities; and serve as a diagnostic tool for early detection of health and nutritional problems in children (9,10).

Growth monitoring (GM), the first step, consists of monthly contact and an assessment of growth, the pattern of weight most commonly and sometimes height/length and mid-upper arm circumference (MUAC). Growth promotion links the growth trend with a target action through tailored counseling and referral, as needed. These actions support children's optimal growth through increased caregiver awareness and attention to child growth, improved caring practices, and increased use of other services(8).

Many countries are deeply committed to GMP as part of their health service platform aimed at addressing malnutrition (11). To enhance the nutritional status of children, the Ethiopian government has also implemented monthly GMP services at the community level, using health extension programs. These efforts are part of the *Seqota* declaration and health sector transformation plan, which prioritize nutritional counseling, early detection, and treatment of diseases (12,13). GMP is also one of the components of the Ethiopia National Nutrition Strategy (NNS) and National Nutrition Program (NNP II), and it has been implemented through health facilities at various levels (14,15).

This research aims to investigate the role of growth monitoring and promotion programs on enhancing dietary diversity in 6–12-month infants in Ethiopia using data from the 2019–2021 PMA-Ethiopia panel survey conducted in selected regions of the country.

1.2. Statement of the problem

Childhood undernutrition continues to be a significant global concern, as it is responsible for 45% of all child deaths (3). UNICEF-WHO-WB Joint Child Malnutrition estimates that, 148.1 million children under 5 years of age were stunted and 45.0 million were wasted in 2022 (16). Asia and African countries have the highest prevalence of stunting with 55% and 39% and wasting 69% and 27% respectively (16). According to the 2023 Ethiopian Food and Nutrition baseline survey report, the prevalence of stunting, wasting and underweight for under 5 year old children at a national level were 39%, 11% and 22 %, respectively (4).

Evidence shows that inadequate child feeding practices are one of the primary factors contributing to child undernutrition during the first 2 years (17). Despite the acknowledged significance of adequate dietary diversity for good growth and development of infants, Ethiopian diet lacked diversity leading to nutrient deficiencies, growth faltering, and long-term health consequences. Stunting in particular is still very common in infants and children, which is partly due to low consumption of diversified diet. Thus, effective interventions are needed to promote dietary diversity and overall nutritional outcomes.

To improve the dietary diversity of children in Ethiopia, several initiatives have been implemented, such as encouraging homestead food production, educating people about nutrition and behavior modification, promoting nutrient-rich foods, increasing the capacity of nutrition service providers, incorporating nutrition into social protection programs, empowering women and girls, and working with partners. However, the lack of dietary diversity and nutritional inadequacy remains widespread. Starchy staples make up a large portion of the diet, exceeding the recommended percentage, while nutrient-rich foods like fruits, vegetables, and animal-source foods are consumed in smaller quantities. GMP program is also being implemented to improve child nutrition status together with counseling for caregivers under community based nutrition program (CBN), which is one of the key components of NNP II (15).

However, evidence on the role of GMP programs in improving dietary diversity among children in Ethiopia is limited. It remains unclear how effectively GMP encourages mothers to provide varied, nutrient-rich diets for infants. Understanding context-specific barriers can help inform strategies to improve infant feeding practices in Ethiopia.

1.3 Significance of the study

Encouraging dietary diversity through GMP is crucial to improve awareness about and adoption of optimal feeding behaviors; however, there is no published research on the topic in Ethiopia to the best knowledge of the principal investigator.

By understanding the role of growth monitoring and promotion program in improving dietary diversity in Ethiopia, this research will contribute to evidence-based strategies and interventions that address the specific needs and challenges of the Ethiopian population. Also, since this study is based on a panel data with analysis of large-scale programs with adequate data, it can give more information on temporal relationship between exposure and outcome of interest and improve precision of estimates by minimizing recall bias.

The findings will inform policymakers, healthcare professionals, and public health stakeholders in designing and implementing effective interventions to improve the dietary diversity and nutrition status of infants aged 6 to 12 months.

1.4 Research Question

Does growth monitoring and promotion program improve dietary diversity practice of infants aged 6 to 12 months?

2. Literature Review

2.1. Dietary diversity among infants 6 to 23 months

Children aged 6-23 months require foods that are high in energy and nutrients in order to support their growth and development (18). However, data show that worldwide, most children aged 6–23 months were not fed according to global recommendations (19). According to data from Demographic and Health Surveys (DHS) conducted between 2010 and 2013 across 27 countries the median percentage of young children with a low MDD was 27% (20).

A systematic review and meta-analysis of numerous studies in Ethiopia (21), showed that the pooled prevalence of dietary feeding practice among children aged 6–23 months in Ethiopia was 23.25%, which contradicts the national survey of Ethiopia reports with a lower prevalence (22,23). This variation may have arisen because of the study area and period of study. In this review the lowest prevalence of dietary diversity was observed in Amhara region (12.58%) and highest prevalence (59.9%) in Addis Ababa- an urban setting (24). This is supported by the Ethiopian demographic health survey (EDHS) 2016 report indicating the highest prevalence of stunting observed in Amhara regions (25).

2.2. Factors associated with dietary diversity

2.2.1. Socio-demographic and economic characteristics

Several sociodemographic characteristics have been found to be associated with the dietary diversity of infants and children. Child age is one of the factors that has shown an association with meeting the minimum dietary diversity score. A secondary data analysis of the Indonesian DHS showed that an increased age of a child (18–23 months) was linked to receiving a more diverse (26). Similarly, a secondary analysis of a national family health survey from India and a review of three DHS from Sub-Saharan Africa countries (SSA) have reported that younger child age (6–11 months) was associated with greater odds of not meeting MDD compared with ages 12–23 months (27,28). Nonetheless, a secondary analysis study of the EDHS in 2011 and a study from southern Ethiopia are controversial with this association, indicating an increase in the age of a child is linked to a poor dietary diversity score (22,29). Also, studies have indicated that children from smaller family sizes are more likely to receive adequate dietary diversity compared to those from larger households(30,31). In the Ethiopian context, many families tend to have a

higher number of children and limited income, which may constrain their ability to afford and provide a variety of nutrient-rich food groups essential for child growth and development.

Another sociodemographic factor linked to infants' dietary practice is the wealth index. Research from Indonesia, Nepal, Ghana, and Ethiopia revealed that children from the lowest wealth index households had a lower chance of meeting MDD than children from the middle and highest wealth index households (24,26,32,33). Residency type can also influence the dietary diversity of infants. According to an Indian study, children born to mothers who lived in cities reported practicing MDD at a higher rate than children born to mothers who lived in rural areas(28). Similarly, research from Ethiopia Niger, and seven Francophone West African nations supports this association (34–36).

Livelihood status in a household is one of the factors associated with meeting minimum dietary diversity of children. Evidences show that ownership of livestock in a house hold plays significant role on indicating good dietary diversity scores in households with at least one animal than those with no livestock (37,38). When livestock products (meat, eggs, milk, and dairy products) are consumed at home, owning livestock can directly improve the nutritional quality of children's diets(39). Mothers who had cow’s milk available at home were more likely to fed their children with optimum dietary diversity(29,40). Also, having home gardening of fruits and vegetables in a household showed a higher odds of meeting MDD as compared to households that didn’t have(41,42).

The association between maternal educational status and MDD of infants and young children has been the subject of numerous studies across different countries. Studies from Indonesia, Bangladesh a review of three SSA counties (Gambia, Liberia and Rwanda) and Ethiopia states that children born from mothers who were well educated and had a secondary level education or higher education had greater odds of feeding diversified foods compared to those with no formal education(26,41–44). Mothers with greater education have greater career opportunities and earn more money, which opens more options for them to buy a variety of meals. Evidences from seven francophone West African countries, Ethiopia and three SSA countries reported that children whose mothers had employment had higher likelihood to achieve MDD than those from mothers who had no employment (35,43,45).

2.2.2 Maternal and health care related characteristics

Maternal health service utilizations are most likely to improve dietary diversity practice of children's since health professionals give counseling about the importance of appropriate complementary feeding practices during these services. Several studies across the world reported that mothers who had institutional delivery, antenatal care (ANC) visits, postnatal care(PNC) visits, knowledge on appropriate infant and young child feeding (IYCF) practices more likely to diversify fed their children than those mothers who hadn't (21,35,43,46).

The exposure of mothers to the media (television, newspaper, radio and social media) can have an impact on their children's dietary diversity because the media can be an effective tool for spreading health information and encouraging healthy habits. Studies from Ethiopia and Malawi showed that children whose mothers who had been exposed to media had a higher odds of having diversified diet than those children of mothers who had not been exposed to media(40,47).

2.2.3. Growth monitoring and promotion related factors

Counseling on Growth monitoring and promotion

It is crucial to emphasize that GMP is not recommended in the absence of appropriate counseling. Tailored, feasible, and understandable individual nutrition and growth counseling by frontline health workers during GMP sessions – or the "promotion" component of GMP – is critical for these GMP programs to be effective(48).

According to a review of 12 GMP programs, growth monitoring, when combined with nutrition and health education and access to basic healthcare facilities, improves nutritional status (reduces underweight children) (9). Nevertheless, these review also pointed out that there is minimal impact on nutritional status from growth monitoring or from merely weighing kids without any kind of nutritional counseling (9). Also, the 2008 Lancet Series on Maternal and Child Undernutrition listed growth monitoring without promotion as a not-to-do intervention(49).

A cross sectional comparison study done in Egypt states that attending GMP improves the continuity of care for the newborn since mothers receive counseling about breastfeeding and maternal nutrition during pregnancy and after delivery, along with complementary feeding counseling starting when the child is six months old (50).

A qualitative study done in Ethiopia declares GMP is unlikely to succeed if mothers/caregivers lack awareness of proper child-feeding practices (51). A study that encourages a compelling need for GMP service despite its implementation challenges highlighted strengthening the promotion component of GMP for action and accountability as one areas of a critical point to consider in shifting the paradigm of programs (52).

Effectiveness of GMP

Although GMP is a widely accepted health sector practice for children worldwide, its effects on children's nutritional outcomes and survival have been a topic of discussion in recent years due to conflicting reports of the program's effectiveness in different parts of the world (9,10).

Large-scale GMP programs have been shown to improve children's nutritional status in Senegal, Madagascar, and India (53,54). Counseling was used in these programs with caregivers through group and individual sessions. In addition to visiting children who showed poor growth at home to give caregivers one-on-one support, community-level health workers conducted weekly or monthly group education sessions at the facility or at a central community site. About 74% to 90% of participants were involved in the GMP project.

Additionally, studies done in Ghana (55) and Afghanistan (56) on counseling in community based GMP showed better feeding practices and a reduction in underweight or overweight of children. Research conducted in SSA indicates that early nutrition counseling and feeding practices that focus on age-specific needs and community livelihood support systems, as well as increasing food purchasing power and getting the support of younger mothers, low-literate and low-income mothers, and implementing and strengthening nutrition-specific interventions, are all necessary to improve infants' diet diversity (27,32,43,57).

Meanwhile, two GMP programs in Bangladesh and one in India that conducted group sessions at a central site on a monthly basis happened to be ineffective at improving child nutritional status (58–60). However, these programs did not provide primary health care services, had low participation in GMP (42% to 85%), or had low coverage of counseling during GMP (85% participated, but only 50% received counseling).

Utilization and factors associated with GMP

To track and enhance children's growth and development, utilizing growth monitoring and promotion service is essential. The United Nations International Children's Emergency Fund (UNICEF) encourages 100% GM coverage (61) ; however, GMP utilization rate worldwide, especially in LMIC is low.

In Africa, a study done in Nigeria showed that even though 65.8% of mothers were knowledgeable about GMP service only 7.5% of them actually visit the clinic for Growth Monitoring regularly (62). Also, a study in northern Ghana on mothers with children under 12 months states that 28.5% utilized GMP services (63).

In Ethiopia, three studies showed similar percentage of GMP utilization: 32.9% in southern (62), 38.9% in northwest (63) and 32.8% south central (64) regions of Ethiopia Meanwhile, other study conducted in the southern region revealed the utilization of GMP among mothers were 16.9% (64). The difference could be due to poor understanding and lack of mother's participation, the sampling technique used and a difference in sociodemographic status. However, it is consistent with a study from north east Ethiopia with utilization rate of GMP 15.9%(65).

Several factors can influence the utilization of GMP services. A comprehensive review of the evidence demonstrating the impact of GMP and identified contributing factors for low participation rate of mothers with children in GMP program, including, poor performance by health workers, and inadequate infrastructure within the health system (9).

Numerous studies from different regions of Ethiopia revealed that index child age(63,64,66–68) , wealth index of a family (64,66), knowledge of mothers/caregivers about service of GMP (63,66,68,69), numbers of family size (64,65), receiving nutritional counseling (68,69), receiving PNC services (65,67), distance to health facility or GMP service facility (66,68), GMP attendance (64) and husbands involvement (51,67) were the factors commonly associated with utilization of GMP service.

2.3 Dietary practice and GMP program

One of the expected benefits of GMP program is improving IYCF practices especially during the complementary period (9,10). However, in some studies, GMP program has been found to influence mostly children under the age of 12 months (63,70) and even more worse findings in a

study done in Accra with exposure of GMP influencing dietary practice of infants under 6 months rather than infants above 6 months old (71).

Practicing exclusive breastfeeding and introducing complementary foods at the right time is essential for the healthy growth and development of a child. A study done in Ghana where a high attendance of scheduled health services were observed, indicates that most mothers knew when it was appropriate to introduce complementary foods to their children, while nearly quarter of mothers indicated wrong timing for the introduction of vegetables, eggs, and meat.(71). Also, several studies shows that there have been improvements in mothers' knowledge and children's diets in areas where the health system has provided age-appropriate, family-specific nutrition counselling (72–75).

Conceptual Framework

This conceptual framework which is adapted from different literature (21,71,73), shows that GMP services improve child dietary diversity by enhancing mothers' knowledge and perceptions of feeding. Socio-demographic factors and maternal and child health (MCH) service usage also directly and indirectly influence feeding practices through their impact on GMP participation and caregiver behavior.

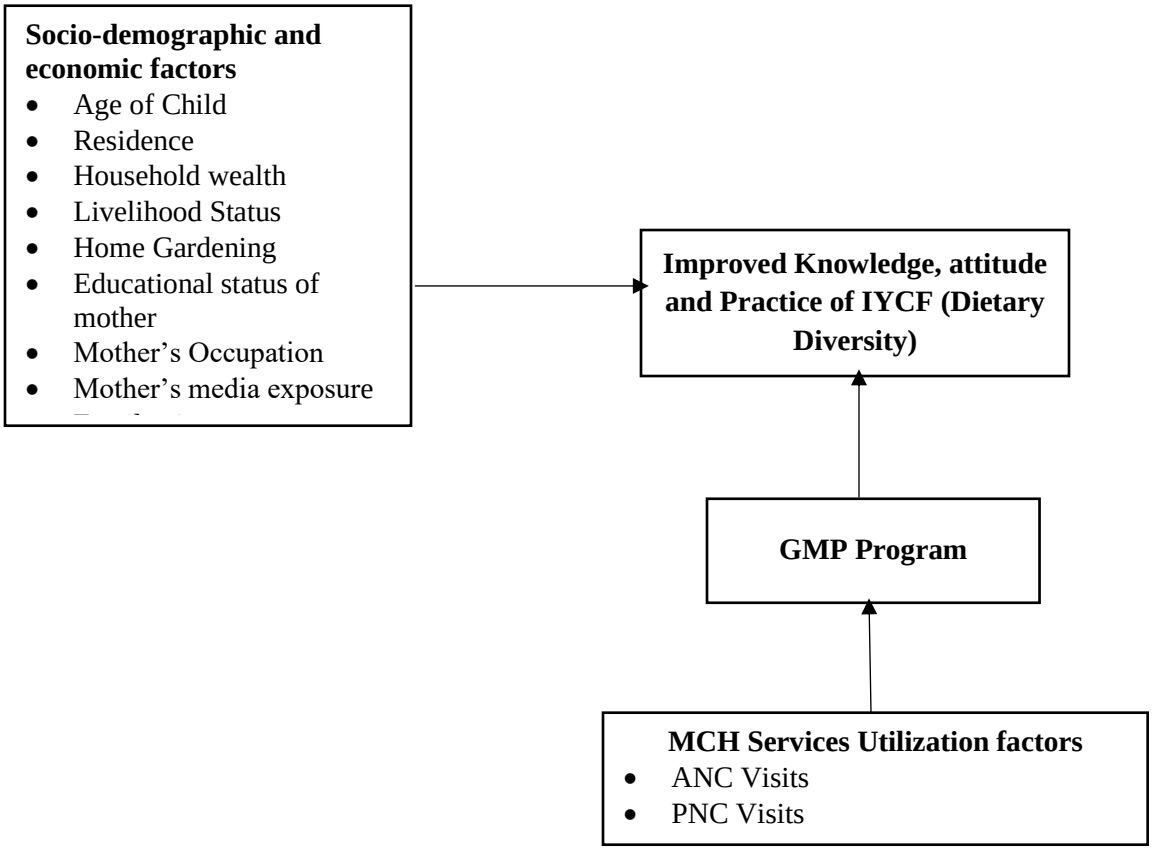

Figure 1:Conceptual framework for the role of GMP in improving optimal dietary practice of infants

3. Objectives

3.1. General objective

- To investigate the role of growth monitoring and promotion program in improving dietary diversity practice of infants in Ethiopia

3.2. Specific objectives

- To determine the percentage of mothers who had utilized growth monitoring and promotion program during post-natal care in selected regions of Ethiopia
- To determine the percentage of infants aged between 6 to 12 months who received adequate dietary diversity in selected regions of Ethiopia
- To examine the role of utilizing GMP in influencing the likelihood of achieving adequate dietary diversity among infants aged between 6 to 12 months in selected regions of Ethiopia

4. Methods and Materials

4.1. Study setting

The PMA project generates frequent, high-quality surveys monitoring key health indicators in nine countries in Africa and Asia by collecting actionable data through longitudinal surveys and cross-sectional panel designs.

The PMA-Ethiopia panel survey was conducted in four major, primarily agricultural regions of Ethiopia—Tigray, Oromia, Amhara, and Southern Nations, Nationalities, and Peoples' Region (SNNPR)—as well as one pastoralist region (Afar) and one urban area (Addis Ababa), which together comprise 90% of the people of Ethiopia. Ethiopia is projected to have a total population of 123 million in 2022, with more than 80% of its people living in rural regions (74). This makes it the second most populated country in Africa (76).

The Ethiopian health tier system is composed of primary, secondary, and tertiary level healthcare organizations. The first level of health systems are district (woreda) systems, which are comprised of satellite health posts that serve 3,000–5,000 people, health facilities that serve 15,000–25,000 people, and primary hospitals that serve 60,000–100,000 people. These are connected to one another by a referral system. Level two hospitals serve 1.1–1.5 million people, while level three specialist hospitals serve 3.5–5 million people (77). The Ethiopian Ministry of Health's 2020–2021 report on health indicators states that the country has 3,777 health centers, 17,699 health posts, and 367 public hospitals (78).

4.2. Study design and period

A community-based cross-sectional study was conducted from January 2024 to May 2025 using secondary data from the PMA-Ethiopia longitudinal panel survey, which included interviews with pregnant women at baseline, six weeks, six months, and one year postpartum. The survey started in 2019 with the intention of producing timely and useful data on a variety of Ethiopian reproductive, maternal, and neonatal health (RMNH) variables. The first cohort of the study, the PMA-Ethiopia panel survey, was used for this study which was carried out between 2019 and 2021. The survey's methodology is described in detail in (https://www.pmadata.org/data/survey-methodology).

4.3. Source population

The source population for this study was all pregnant and postpartum women enrolled in the 2019–2021 cohort of the PMA-Ethiopia project.

4.4. Study population

The study population comprised live-born children whose mothers were enrolled during pregnancy or early postpartum in the 2019–2021 cohort of the PMA-Ethiopia project, completed the 1-year follow-up interview, and met the eligibility criteria for inclusion in the child-level dietary diversity analysis.

4.5 Eligibility Criteria

Inclusion Criteria: Children were included if their mothers were enrolled at baseline, completed follow-ups at 6 weeks, 6 months, and 1 year postpartum, received PNC, and had complete data on the outcome. Children had to be live-born and survive the 1-year follow-up.

Exclusion Criteria: Children were excluded if their mothers had incomplete baseline data, refused follow-up, or were lost to follow-up; if the pregnancy ended in stillbirth or the child died before 1 year; if the mother did not receive PNC; or if data on outcomes were missing.

4.6. Data source

Addis Ababa University and the Johns Hopkins Bloomberg School of Public Health (JHSPH) collaborated to conduct the PMA-Ethiopia survey. PMA Ethiopia is composed of three separate survey components: a panel survey consisting of two cohorts of women from 2019–2021 and 2021–2023, which follows pregnant women for a year after giving birth, and an annual cross-sectional survey that is conducted out nationally. Data for this study came from a 1-year panel survey of the first cohort of postpartum mothers.

4.7. Sampling technique and procedure

This study used a consecutive sampling approach, drawing on data from the 2019–2021 cohort of the PMA-Ethiopia panel survey. All pregnant and postpartum women who met the study's inclusion criteria were enrolled at baseline and followed prospectively through 6 weeks, 6 months, and 1 year postpartum. A total of 2,889 pregnant and postpartum women (78% pregnant) were enrolled at baseline. Of these, 124 were excluded due to incomplete data, refusal to follow up, ineligibility, or lack of follow-up data. This left 2,765 mothers of live infants who

participated in the 6-week postpartum follow-up. At this stage, further exclusions occurred due to refusal, maternal death, stillbirths, and infant mortality, resulting in 2,541 mothers at the 6-month follow-up. Additional loss to follow-up, including refusals, absence of caregiver, child deaths, and missed interviews, reduced the cohort to 2,395 mothers at the 1-year follow-up. For the purposes of this study, which conducted child-level analysis to account for twins, we focused on children whose mothers had received PNC and had complete relevant data. After excluding an additional child death and women who had not received PNC services, the final analytic sample comprised 937 children born to 924 mothers.

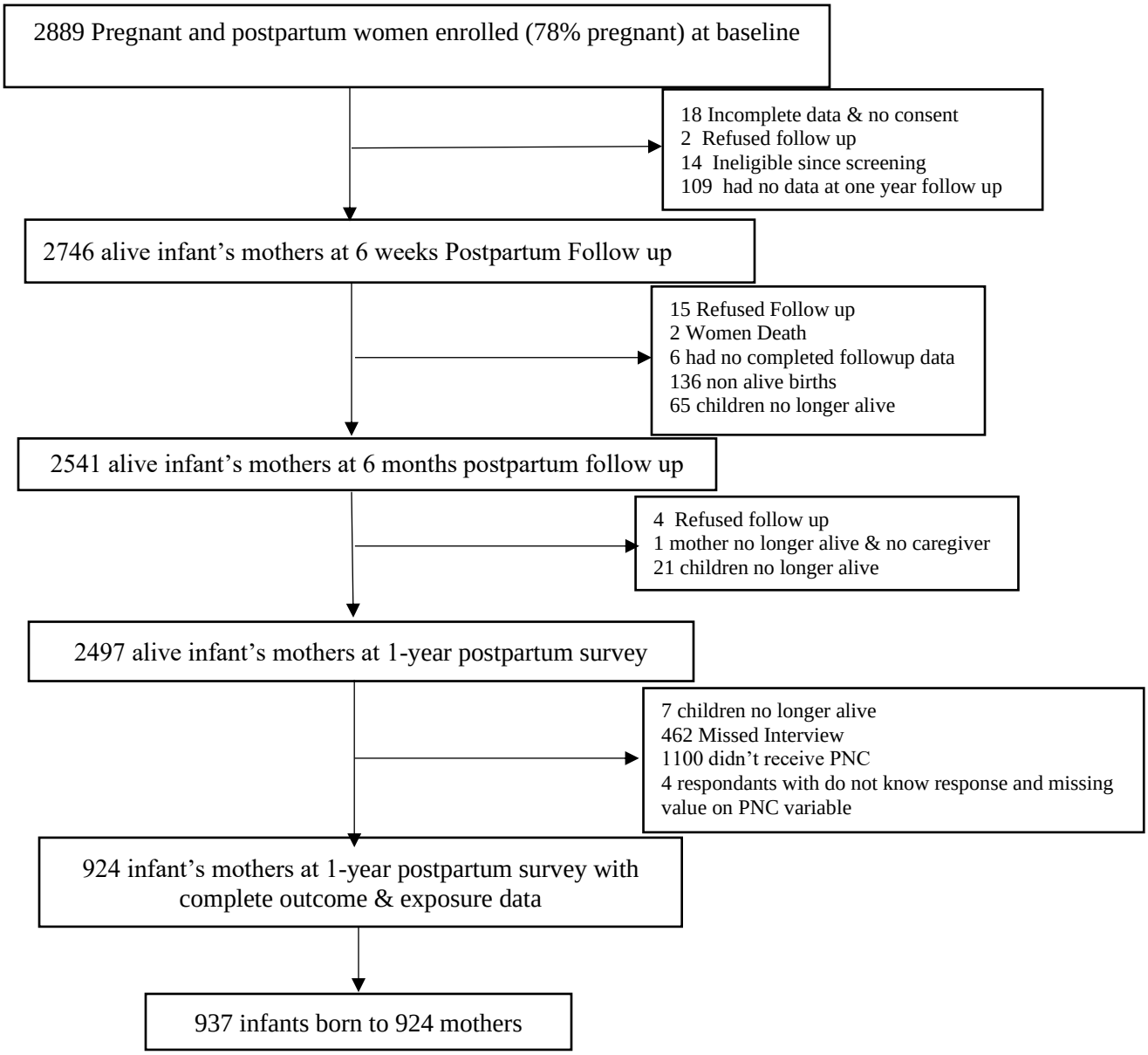

Figure 2:The selection process for the analytic sample of postpartum women with alive infants

4.8. Study variables

Exposure variable – GMP Utilization (Yes, No)

Respondents were asked during the one-year postpartum follow-up whether they had received any health checks for themselves or their child from a health extension worker or another professional healthcare provider in the past six months. Those who answered "yes" were considered to have received PNC, coded as "Yes" (1), and those who did not were coded as "No" (0). Among women who reported receiving PNC, additional questions were asked regarding child nutrition counseling, including advice on providing a variety of foods, animal source foods, feeding frequency, and avoiding sugar-sweetened beverages (SSB). Receiving any nutritional counseling was defined as answering "yes" to at least one of these topics, representing the "Promotion" (P) component of GMP in this study. A "No" response to all indicated no promotion received. Similarly, women who reported receiving PNC were asked whether their child's weight, height, or MUAC had been measured since delivery. Reporting at least one of these measurements was considered as having received GM, while reporting none was considered as not having received GM.

Outcome variable

Dietary diversity among children was assessed using the updated WHO/UNICEF definition of MDD. Children were classified as having 'adequate' dietary diversity if they consumed foods from at least five out of eight defined food groups in the previous 24 hours. Data was collected by asking mothers whether the child had been breastfed and whether any food or liquids were given during the preceding day.

A cumulative dietary diversity score was calculated by summing the number of food groups consumed by each child in the past 24 hours. A binary outcome variable for meeting MDD was then generated, where children who consumed foods from five or more of the eight recommended food groups were coded as '1' (adequate), and those who consumed fewer than five were coded as '0' (inadequate).

The eight food groups included:

1. Breast milk

2. Grain, roots, and tuber foods, including root vegetables, gruel (sweetened or unsweetened), fenugreek (sweetened or unsweetened), grains (such as rice, noodles, and porridge), and any commercially fortified baby foods
3. Legumes and nuts, including any foods made from beans, peas, lentils, or nuts •
4. Dairy products, including milk, infant formula, yogurt, cheese, and commercial cheese products
5. Animal protein, including organ meats, meat (e.g., beef, pork, and chicken), and fresh or dried shellfish
6. Eggs
7. Vitamin A rich fruits and vegetables, including yellow vegetables (e.g., pumpkin, carrot, and squash), dark green vegetables, and ripe fruits (e.g., mangoes and papayas)
8. Other fruits and vegetables

Independent Variables (confounders): were identified based on the literature review. They include:

- **Maternal age**: Respondents reported their age in completed years, which was then categorized into age groups for this study analysis: 15–24, 25–34, and 35–49 years.
- **Marital status:** Participants were asked about their current marital status, with responses categorized for this study as "Married" (including currently married and living with partner) and "Not Married" (including never married, divorced, separated, and widowed)
- **Maternal education level:** Women reported their highest level of education attained, which was categorized in this study as: No formal education, Primary education Secondary education & Above (including technical, vocational, or university-level education)
- **Region**: was restricted to six major regions included in the panel data: Tigray, Afar, Amhara, Oromia, SNNP, and Addis Ababa
- **Residence:** The place of residence was classified as urban or rural based on administrative definitions.
- **Religion**: Religious affiliation was collected based on maternal self-report and categorized as follows for this study: respondents identifying as Orthodox Christian were grouped under "Orthodox"; those identifying as Muslim were categorized as "Muslims";

and those reporting Protestant, Catholic, traditional beliefs, Wakefeta, other religions were grouped into a combined category labeled "Protestant & Others

- **Household Wealth Index:** The household wealth index was generated using Principal Component Analysis (PCA) based on ownership of assets and housing characteristics. Households were initially grouped into five quintiles. For this study, the five quintiles were recategorized into three groups: the lowest and second-lowest quintiles were combined and labeled as "Lowest," the middle quintile was retained as "Middle," and the fourth and highest quintiles were grouped under "Highest."
- **Livestock Ownership:** Livestock ownership was assessed by asking households whether they owned any livestock. Responses for this study were coded into: “Yes” if the household owned one or more livestock and “No” if it did not.
- **Parity:** was determined by the number of live births a woman had experienced, categorized in this study as: “Nulliparous” (no previous births), “Primiparous–Multiparous” (1–4 previous births), and “Grand Multiparous” (5 or more previous births). The index and most recent pregnancy were excluded from parity.
- **Place of Delivery:** Mothers were asked where they delivered their most recent child. For this study, their responses were grouped into two categories: **Home Delivery** for deliveries that took place at the respondent's own home or another person’s home. And **Institutional Delivery** for deliveries that occurred in any health facility, including government hospitals, health centers and posts, NGO/faith-based facilities, private hospitals/clinics, and other public or private medical institutions.
- **ANC visits:** ANC was coded as “Yes” if the mother saw either a health extension worker or a professional healthcare provider during their most recent pregnancy, and “No” if she saw neither.

4.9. Data collection procedures

PMA-Ethiopia conducted a series of subsequent field staff trainings before to the start of the first round of data collecting. Field supervisors and regional coordinators participated in a two-week training-of-trainers (TOT) before becoming master trainers for the resident enumerator (RE) trainings. In-depth reviews of survey procedures, questionnaire material, and interview techniques were covered in each two-week RE training session. Field staff training comprised three days of field activities, where participants practiced using the tools over the phone in

addition to classroom exercises. Amharic was the primary language used during the course. Additionally, a few small group meetings were held in Tigrinya and Afan Oromo. Later RE trainings were led by the AAU team with assistance from JHBSPH, while at the TOT, JHSPH personnel and faculty led the training with assistance from AAU project staff. Throughout the project, more training sessions were conducted.

All the interviews were conducted face-to-face at the respondent's home, and all data was self-reported. To minimize recall bias, the delivery date reported in the six-week interview was used to determine the number of months postpartum and the age of the child during the interview and if this date was not available, the delivery date reported in the six-month and one-year interviews was used.

4.10. Operational definitions

GMP utilization was defined as the mother receiving any PNC for herself or her child in the past six months and reporting that her child received at least one anthropometric measurement--weight, height, or MUAC since delivery during the PNC visit(s).

4.11. Data Management

The data were originally downloaded from Open Data Kit (ODK) aggregate server during data collection period and cleaned by the data management team of PMA- Ethiopia using Stata version 18. Prior to analysis, exploratory data analysis was conducted to understand the structure, quality, and completeness of the dataset. Key variables such as dietary diversity scores, GMP exposure, ANC, and place of delivery were assessed for missingness and flagged to define valid analytic subpopulations. New variables were created, including binary outcome indicators for minimum dietary diversity at six months and one year, as well as GMP exposure variables constructed from counseling and measurement components. Sociodemographic and maternal health service variables were recorded into categories. Univariate tabulations were performed to summarize distributions, and bivariate associations were explored to guide multivariable model selection. This process ensured a clean, well-structured dataset suitable for subsequent weighted logistic regression analysis.

Missing values in food group variables were handled using multiple imputations. Any missing values within a food category were assumed to be consumed if a person reported consuming at least two foods from that category.

Sociodemographic and economic characteristics of women including maternal age, educational level, parity, place of residence, household wealth, livestock ownership, marital status and residence were extracted from data that were collected during baseline survey.

Delivery place was determined primarily from the 6-week follow-up report. To improve completeness, missing data on delivery place variable were sequentially used from the baseline or 6-month follow-up. ANC visit data were also collected during the 6-week follow-up with some observations having missing values. Multivariable analyses were not performed on respondents with missing value on Delivery place or ANC. Nevertheless, regardless of the availability of 6-week data, participants who had complete outcome data at the 1-year follow-up were kept for descriptive and outcome-specific analyses. This approach maximized the use of available data across rounds while maintaining consistency in variable availability for each model.

On the one-year postpartum follow-up survey period, variables such as the infants' dietary diversity practices and the services women received during PNC, like GMP, were gathered. The final analytic sample did not include observations with 'Do not know' responses and missing values on receipt of PNC and GMP services since it was not possible to reliably assess the GMP exposure status and since GMP related questions were only applied to respondents who received PNC services. In cases where the biological mother was deceased, data reported by a primary caregiver were included if complete and relevant to the study's' findings.

4.12. Data Analysis

All analyses were conducted at the child level using Stata version 18 and accounted for the complex survey design of the PMA-Ethiopia panel dataset using sample weights. Sampling weights were applied to generate regionally representative estimates for the six regions included in the PMA-Ethiopia panel. Specifically, the female panel weight was used to adjust for the probability of EA selection, individual-level non-response, and attrition due to loss to follow-up.

The survey design was declared using the *svyset* command, specifying the Enumeration Area_ID as the primary sampling unit and the one-year strata variable.

Descriptive statistics were generated using survey-weighted means and proportions. Bivariate associations between key independent variables and dietary diversity were examined using survey-adjusted cross-tabulations and chi-square tests. Multivariable logistic regression was used to estimate AORs and 95% CIs for the association between GMP and adequate dietary diversity, focusing on a subpopulation of children who completed the 1-year follow-up with complete dietary diversity and covariate data. All analyses accounted for the complex survey design using the svy: prefix to ensure proper variance estimation.

The multicollinearity assessment was done using the Variance Inflation Factor (VIF). It showed that all predictors in the one-year models had VIF values well below 5, with mean VIFs of 1.59. This indicates that no sign of multicollinearity was detected among variables in the final model.

Using the Hosmer–Lemeshow test, the logistic regression model's goodness-of-fit was evaluated. The results indicated no signs of poor fit ($\chi^2 = 2.64$, df = 8, p = 0.9547), suggesting that the model fits the data well.

4.12. Ethical considerations

This research proposal went through review and approval by the Research Ethics Committee of the School of Public Health, Addis Ababa University.

Informed consent to participate was obtained at the screening and prior to enrollment by all participants and was provided orally. Only the principal investigators had access to the recorded data, and it was held confidentially. The study participants were not subjected to any harm using the findings of this study. The data extracted from PMA- Ethiopia was solely used for the study's intended purpose and was maintained securely to protect confidentiality.

Authorization to utilize the data has been obtained after legal registration from the PMA Ethiopia's survey project. The data utilized in the study is openly accessible on the PMA website (79) and can be accessed by creating an account and submitting a reasonable request.

The AAU Institutional Review Boards [075/13/SPH] and the JHSPH institutional review boards [00009391] approved all PMA-Ethiopia surveys ethically. There is more information available in the protocol of PMA- Ethiopia survey regarding the PMA Ethiopia survey's design, including weighting and informed consent protocols (80).

4.13. Dissemination Plan

The results of this study will be submitted and presented to Addis Ababa University College of Health Science, School of Public Health, department of nutrition and dietetics. The findings will also be shared to PMA-Ethiopia project, Minister of Health and other relevant organizations involved in IYCF works in Ethiopia. Furthermore, the findings will be sent to reputable journals and scientific publications for potential publication.

5. Result

5.1. Socio-Demographic, Economic, and Maternal Health Service Characteristics

A total of 915 weighed children were included in the analysis of this study. The mean age of mothers was 27.3 years (SD = 5.8), with a minimum age of 15 and a maximum of 47 years. Participants from the Oromia region represented the largest proportion (42.3%), followed by Amhara (22.4%) and SNNP (20.8%). Most participants resided in rural areas (72.4%), and nearly all were married (98.6%). In terms of educational attainment, 41.3% had completed primary education, 35.7% had never attended school, and 23.0% had secondary education or above. The dominant religion among participants was Orthodox Christianity (43.7%), followed by Islam (32.4%) and Protestant and other religious groups (24.0%). Regarding household wealth, 44.8% of the participants were in the highest wealth category, while 35.8% fell in the lowest. 72.9% of the respondents reported owning livestock.

Only 29.2% of the mothers reported attending a GMP visit at one year postpartum. In terms of parity, the majority (63.7%) were either primiparous or multiparous, while 18.1% were nulliparous and 18.2% grand multiparous. Most deliveries occurred in health institutions (66.8%), whereas 33.2% took place at home. Antenatal care coverage was relatively high, with 84.9% of mothers having attended at least one ANC visit during pregnancy.

Table 1: Women's sociodemographic, economic and maternal health service utilization characteristics in selected regions of Ethiopia

Variable	Category	N (%)
Sociodemographic and economic factors		
Maternal Age	<25	302 (33.0%)
	25–29	300 (32.8%)
	30–34	175 (19.1%)
	≥35	138 (15.1%)
Region	Tigray	71 (7.8%)
	Afar	16 (1.7%)
	Amhara	205 (22.4%)
	Oromia	387 (42.3%)
	SNNP	190 (20.8%)
	Addis Ababa	46 (5.0%)
Residence	Urban	253 (27.6%)
	Rural	662 (72.4%)
Marital Status	Not Married	13 (1.4%)
	Married	902 (98.6%)
Educational Status	Never attended	327 (35.7%)
	Primary	378 (41.3%)
	Secondary & above	210 (23.0%)
Religion	Orthodox	399 (43.7%)
	Muslims	296 (32.4%)
	Protestant & Others	219 (24.0%)
Household Wealth Index	Lowest	328 (35.8%)
	Middle	177 (19.4%)
	Highest	410 (44.8%)
Livestock Ownership	No	248 (27.1%)
	Yes	667 (72.9%)
Maternal Health Service Factors		
Parity	Nulliparous	166 (18.1%)
	Primiparous-Multiparous	583 (63.7%)
	Grand Multiparous	166 (18.2%)
Delivery Place	Home Delivery	304 (33.2%)
	Institutional Delivery	610 (66.8%)
Antenatal Care Visit	No	134 (15.1%)
	Yes	756 (84.9%)

5.2 Prevalence of Minimum Dietary Diversity in Infants aged 6- 12 months

By the end of the one-year postpartum survey, only 18.5% (95% CI: 14.7%, 23.1%) of infants had achieved the recommended minimum dietary diversity. In contrast, 81.5% of infants did not meet the recommended dietary diversity score.

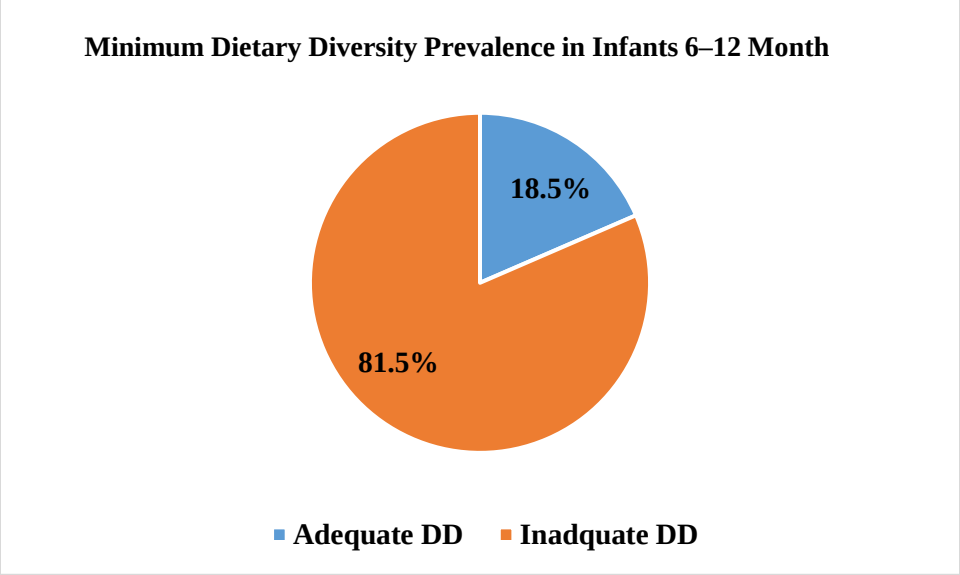

Figure 3: Prevalence of minimum dietary diversity in infants aged 6 to 12 months during the 1 year postpartum follow up survey in selected regions of Ethiopia

A bar chart illustrating the types of food groups infants consumed is shown in figure 4 below. Breast milk was the most widely consumed food group, with 96.1% of infants receiving it. Followed by the consumption of grain, roots, and tuber foods, which was reported in 93.7% of infants. Moderate consumption levels were reported for dairy products food (48%) and legumes and nuts at 41.8%. However, only 27.1% of infants consumed vitamin A-rich fruits and vegetables, and eggs were eaten by just 22.1%. The lowest consumption rates were reported for animal protein (5.9%) and other fruits and vegetables (8.8%).

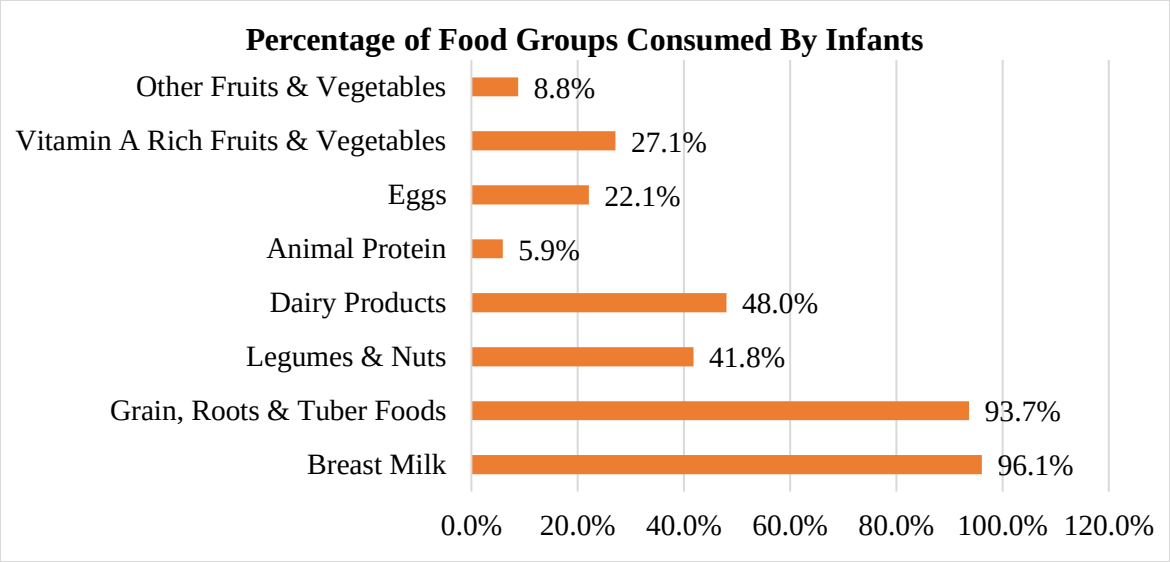

Figure 4:Percentages of food groups consumed by infants aged 6 to 12 months at 1 year postpartum follow up survey in selected regions of Ethiopia

5.3 Growth Monitoring and Promotion Utilization

At one year postpartum, only 29.2% [95%CI: (24.7%, 34.0%)] of mothers reported that they had utilized GMP program for their child since delivery. On the other hand, majority of mothers (70.8%) indicated that they had not participated in any GMP services until one-year post-partum.

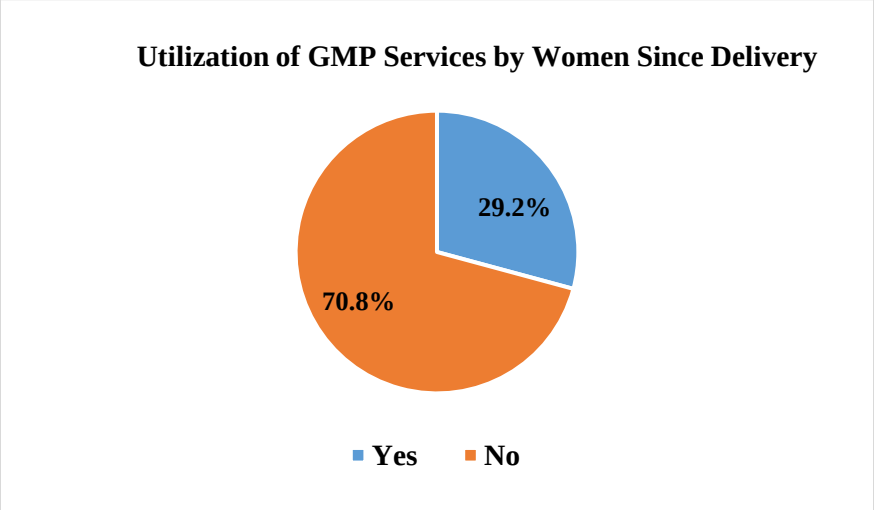

Figure 5: Percentage of Women's who has received GMP services since delivery selected regions of Ethiopia

5.4 Factors Associated with Minimum Dietary Diversity at One Year Postpartum

After conducting bivariate regression analysis between the independent variables and the outcome variable, a p-value threshold of <0.25 was used to select variables for inclusion in the multivariate regression analysis. However, marital status was included in the multivariate model despite having a p-value >0.25, based on its established statistical association with the outcome in previous literature.

Having GMP visit was not significantly associated with dietary diversity, as shown by both the bivariate and multivariate analyses [AOR: 0.96(0.85, 1.50); p=0.846]. Although a slightly higher proportion of children who participated in GMP had sufficient dietary diversity, the difference was not statistically significant. Mothers aged 35 years and above were significantly more likely to provide a diverse diet to their infants (AOR = 3.18, p = 0.000). While mothers aged 25–34 also had higher odds of feeding diverse diets compared to younger mothers, the associations were not statistically significant after adjustment. Mothers who attained secondary education or above had 3.69 higher odds of providing a sufficiently diverse diet (AOR = 3.69, p = 0.000), while those with only primary education showed a positive association but not significant. Wealth status was also significantly associated with dietary diversity; children from households in the highest wealth category were more likely to meet minimum dietary diversity (AOR = 2.74, p = 0.019), although the middle wealth group did not show a significant effect.

Other factors such as residence (urban vs rural), livestock ownership, place of delivery, and ANC visits all showed significant associations in bivariate analysis but were not statistically significant after controlling for other variables.

Table 2: Bivariate & multivariable regression analysis model for the role of utilizing GMP services in improving dietary diversity practice of infants aged- 6 to 12 months in Ethiopia at one year postpartum follow up survey

	Dietary Diversity		Bivariate		Multivariate	
Variable	**Adequate (N, %)**	**Inadequate (N, %)**	**COR (95%CI)**	**P Value**	**AOR (95%CI)**	**P Value**
Participation In GMP						
No	112 (67.9)	522 (72.0)	1		1	
Yes	53 (32.1)	203 (28.0)	1.21(0.77, 1.91)	0.406	0.96(0.85, 1.50)	0.846
Maternal Age						
<25	41 (24.6)	248 (34.1)	1		1	
25-29	64 (39.0)	231 (31.9)	1.70(1.01, 2.86)	0.047	1.49(0.13, 2.49)	0.126
30-34	33 (20.1)	138 (19.0)	1.46(0.80, 2.67)	0.212	1.75(0.07, 3.21)	0.069
≥35	27 (16.4)	109 (15.0)	1.51(0.79, 2.89)	0.212	3.18(0.00, 5.99)	0.000
Residence						
Urban	70 (42.7)	171 (23.5)	1		1	
Rural	95 (57.3)	555 (76.5)	0.41(0.25, 0.69)	0.001	1.39(0.35, 2.79)	0.350
Marital Status						
Not Married	2 (1.2)	10 (1.3)	1		1	
Married	163 (98.8)	716 (98.7)	1.15(0.21, 6.18)	0.87	1.13(0.90, 7.48)	0.902
Educational Status						
Never attended	36 (21.9)	283 (39.0)	1		1	
Primary	55 (33.2)	314 (43.3)	1.37(0.72, 2.60)	0.342	1.54(0.20, 2.98)	0.195
Secondary and above	74 (45.0)	128 (17.7)	4.54(2.61, 7.89)	0.000	3.69(0.00, 7.03)	0.000
Wealth Index						
Lowest	32 (19.7)	292 (40.2)	1		1	
Middle	19 (11.3)	155 (21.4)	1.07(0.45, 2.56)	0.871	0.95(0.91, 2.28)	0.913
Highest	114 (69.1)	279 (38.4)	3.67(1.91, 7.06)	0.000	2.74(0.02, 6.34)	0.019
Livestock Ownership						
No	70 (42.5)	166 (22.8)	1		1	
Yes	95 (57.5)	560 (77.2)	0.40(0.25, 0.64)	0.000	0.89(0.69, 1.56)	0.686
Delivery Place						
Institutional Delivery	132 (80.3)	459 (63.2)	1		1	
Home Delivery	33 (19.7)	267 (36.8)	0.42(0.24, 0.73)	0.002	0.80(0.50, 1.54)	0.502
Antenatal Care Visit						
No	13 (7.6)	122 (16.8)	1		1	
Yes	152 (92.4)	604 (83.2)	2.45(1.34, 4.49)	0.004	1.79(0.09, 3.51)	0.090

6. Discussion

This study aimed to investigate the role of utilizing GMP Programs during postnatal care services in improving dietary diversity practice of infants aged 6 to 12 months in Ethiopia. It also determined the percentage of mothers who had utilized GMP services since delivery and the percentage of infants aged 6 to 12 months who received the recommended minimum dietary diversity score.

Mothers who utilized GMP services since delivery were 29.2% [95%CI: (24.7%, 34.0%)] by one-year postpartum follow-up survey which is consistent with the pooled proportion of GMP utilization found by two systematic and meta-analysis of several studies on GMP service utilization among children under two years old in Ethiopia 23.2% (95% CI:16.02%, 30.41%) & 25.7 (95%CI: 24.39%, 27.04%) (81,82) and with a study conducted in Ghana 26.5% (63).On the other hand, the percentage of GMP service utilization was less than a study conducted in Accra 64% (71) and South Africa 70% (83). Variations in the study population, study setting, and participants' sociodemographic characteristics could be the cause of this disparity.

From the major expected benefits of the GMP program, one is improving infant and young child feeding practices, especially during the complementary period (9,10). As dietary diversity is a core component of IYCF practices, this study revealed that only 18.5% [95% CI: (14.7%, 23.1%)] infants aged 6-12 months received sufficient dietary diversity at one-year postpartum follow-up survey. This finding is in line with the community based study done in northwest Ethiopia 17% (95% CI: 14.9%, 19.4%) (84). However, this finding is higher than the 2023 National Food and Nutrition Strategy Baseline Survey Report by the Ethiopian Public Health Institute (EPHI) with 8% dietary diversity prevalence (4). This inconsistency may arise from the fact that the participants in this study were women who received PNC services, which resulted in a higher prevalence compared to the EPHI survey report.

Multivariable logistic regression model was used to investigate the association between utilization of Growth Monitoring and Promotion services and achieving the recommended minimum dietary diversity scores at one year postpartum after adjusting for potential confounders .This study reported that there was no significant association observed between

GMP utilization and dietary diversity in either the unadjusted or adjusted analyses [AOR: 0.96(0.85, 1.50); p=0.846]. This aligns with previous research done in Ghana, which has shown no significant association between mothers' exposure to GMP and child feeding practices (69). In other hand, this finding contradicts with another study done in Ghana and Ethiopia where GMP exposure showed a stronger association with achieving minimum dietary diversity (85,86). These differences could be due to in GMP program implementation quality, study setting, and outcome focus.

The findings of this study suggest that while GMP services are designed to promote optimal feeding practices and improve nutritional outcomes through regular contact and counseling, their independent effect on dietary diversity may be limited when broader sociodemographic, household and health care factors are considered. Also, it is possible that GMP services in the study setting may focus more on anthropometric measurements rather than providing actionable dietary advice. This finding underlines the need to strengthen the "promotion" component of GMP by integrating effective counseling on child feeding and maternal nutrition.

The study also employed multivariable regression analysis to examine other independent factors associated with achieving the recommended minimum dietary diversity score among infants aged 6-12 months after adjusting for potential confounders. The final model controlled demographic factors (maternal age and residence), socioeconomic indicators (educational status, wealth index, and livestock ownership), and maternal and child health service use (place of delivery and antenatal care visits).

Maternal age of ≥35 years was significantly associated with higher odds of achieving the recommended MDD (AOR = 3.18, 95% CI: 0.00–5.99, $p < 0.001$), indicating older mothers may possess more experience, resources, or knowledge that supports better child feeding practices. This may be because of having greater life experience in child feeding practice as getting older which enables them to make better dietary choices for their children. This finding aligns with prior studies in Ethiopia that link maternal age with improved child care practices and nutritional outcomes (30,87).

Similarly, mothers with secondary education or higher had 3.69 odds of meeting the minimum dietary diversity requirements compared to those who never attended school (AOR = 3.69; $p < 0.001$). This is consistent with evidence from previous literature indicating that educated women are more likely to understand and apply nutritional knowledge, access health services, and have greater control over household resources(26,41–44). These findings suggest that interventions aimed at increasing educational opportunities for women could significantly enhance dietary diversity, ultimately improving maternal and child health outcomes.

In terms of socioeconomic status, mothers from the highest wealth index were significantly more likely to provide diverse diets compared to those in the lowest tertile (AOR = 2.74, 95% CI: 0.02–6.34, $p = 0.019$). This aligns with a population-based cross-sectional study done on a DHS surveys from three sub Saharan countries & a secondary data analysis study from 2016 EDHS suggesting mothers from highest households' wealth status were more likely to meet MDD for their infants (88,89). Economic constraints likely limit access to a variety of nutrient-rich foods, suggesting that food security and affordability remain critical barriers in achieving dietary diversity.

In contrast, other variables such as residence type, livestock ownership**,** marital status, place of delivery, and antenatal care visits were not significantly associated with dietary diversity after adjusting for confounders. This finding contradicts with other studies which show that these variables are in a significant relationship with dietary diversity (39-42). These differences may be due to cultural norms, contextual and quality differences in service delivery. Similarly, while livestock ownership is often assumed to enhance dietary access through animal-source foods, it may not translate to improved child diets if animals are kept for income or cultural reasons rather than consumption.

The findings of this study imply that while GMP programs remain a valuable platform for delivering nutrition counseling, their impact on child nutrition may be enhanced when integrated with broader interventions targeting maternal education, economic status, and social support systems.

7. Strengths and Limitations

In this study, dietary diversity score was evaluated using a 24-hour recall method, which, while useful, may not accurately reflect habitual dietary practices. This approach is susceptible to recall bias and can be influenced by seasonal variations in food availability. Additionally, the reliance on self-reported data for both dietary diversity and GMP participation introduces the possibility of bias, as participants might overestimate their dietary practices or attendance at GMP sessions. Despite these limitations, this study contributes valuable evidence to a largely underexplored area, helping to inform program design and paving the way for future research on the relationship between GMP participation and dietary diversity. Additionally, the research included a diverse population from various regions, which enhances the generalizability of the findings. This broad representation makes the results more applicable to similar contexts within Ethiopia, allowing for a better understanding of dietary diversity challenges faced by mothers and infants in different settings.

8. Conclusion and Recommendations

Conclusion

In conclusion, this study found a low prevalence of adequate dietary diversity among infants, with no statistically significant association between utilization in GMP services and achieving minimum dietary diversity. While GMP utilization may support better feeding practices, the findings suggest that GMP alone is insufficient to significantly improve dietary diversity outcomes. This underscores the need for comprehensive, multisectoral strategies that go beyond service utilization to address the broader determinants of child nutrition.

Recommendations

Efforts should focus on enhancing women's access to quality education, as it plays a vital role in improving overall child health and nutrition. Programs that promote community support and knowledge-sharing among mothers can also contribute to better feeding practices.

Improving household food security and affordability should be prioritized through targeted economic and social protection interventions. Policies that ensure access to diverse, nutritious foods for all families are essential. Finally, future nutrition programs should be context-specific, considering cultural practices and local resource use.

Future research should incorporate both qualitative and quantitative approaches to gain a deeper understanding of how GMP services influence dietary diversity outcomes. This includes exploring the frequency and consistency of GMP visits, the quality-of-service delivery, the content and relevance of nutritional counseling provided, caregivers' perceptions and knowledge uptake, and potential barriers to behavior change.

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10. Annexes

Annex 1: Informed Consent

English Version

Hello. My name is ___ and I am working for the Addis Ababa University, and Federal Ministry of Health. We are conducting a local survey about various health issues using a smart phone. We would very much appreciate your participation in this survey. This information will help us inform the government to better plan health services. The survey usually takes only 15 minutes. Your data will not be linked to your identity when conducting analyses, presenting results, or sharing data.

Participation in this survey is voluntary, and if we should come to any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope that you will participate in this survey since your views are important.

I am going to ask you questions about your family and information about this household. We would then like to ask a different set of questions to female members of this household who are between the ages of 15 and 49.

If you have any questions about the study and your right as a research participant, you may ask me now or you may also contact the principal investigators of the study, Dr. Solomon Shiferaw (+251 911 406845) or Dr. Assefa Seme (+251 911 22 8193) at Addis Ababa University in Addis Ababa, Ethiopia.

Amharic Version

ጤና ይስጥልኝ፣ ስሜ _____ይባላል። የምሰራውም ለአዲስ አበባ ዩኒቨርስቲና ጤና ጥበቃ ሚንስቴር ነው። ሴቶችን በተለያዩ የስነ ተዋልዶ ጤና ነክ ጉዳዮች ላይ የቤተሰብ እቅድ አገልግሎትን ጨምሮ የሚዳስስ በዘመናዊ ስልኮች የታገዘ አገር አቀፍ የዳሰሳ ጥናት በማድረግ ላይ እንገኛለን። ጥናቱ የህብረተሰብ ጤና ያለበትን ደረጃ ለመከታተል የሚያስችል ሲሆን ጥያቄዎቹን የምንጠቀመው ለጥናት አላማ ብቻ ነው። እርስዎ በዚህ ጥናት በመሳተፍዎ እጅግ አድርገን እናመሰግናለን። የሚሰጡን መረጃ መንግስት የሚያቀርበውን የጤና አግልግሎት በተመለከተ የተሻለ ለማቀድ የሚያግዝ መረጃ ለመስጠት ያስችለናል። ቃለመጠይቁን ለማጠናቀቅ የሚወስደው ጊዜ በአማካይ ከ30 እስከ 40 ደቂቃዎችን ብቻ ነው። የሚሰጡት ማንኛውም አይነት መረጃ በሚስጥር የሚያዝ ሲሆን የጥናቱ ውጤት በሚጠናቀርበትም ሆነ ውጤቱ በሚገለጽበት ወቅት የእርስዎ የግል መረጃ በምንም አይነት መንገድ አይገለጽም።

በዚህ ጥናት ላይ የሚሳተፉት በፈቃደኝነት ሲሆን መመለስ የማይፈልጉትን ጥያቄ እንዳውቀው በማድረግ ወደ ቀጣይ ጥያቄዎች ማለፍ የምንችል ሲሆን በማንኛውም ጊዜም ቃለ-መጠይቁን የማቆም መብት አሎት። ነገር ግን የእርስዎ በዚህ ጥናት መሳተፍና የእርስዎን አስተያየት ማግኘት ጠቃሚ ስለሚሆን በጥናቱ ለመሳተፍ እና ለጥያቄዎቹ መልስ ለመስጠት ፈቃደኛ እንደሚሆኑ ተስፋ አደርጋለሁ። በጥናቱ ለመሳተፍ ፈቃደኛ ከሆኑ የ25 ብር የሞባይል ካርድ ይሰጥዎታል።

ስለ ጥናቱ ሊጠይቁኝ የሚፈልጉት ጥያቄ ካለ ወይም በጥናቱ ሲሳተፉ የሚኖርዎትን መብት በተመለከተ

መጠየቅ የሚፈልጉ ከሆነ እኔን አሁን መጠየቅ ይችላሉ።በተጨማሪም በአዲስ አበባ የኒቨርሲቲ የሚገኙትን አጥኚዎች ዶ/ር ሰለሞን ሽፈራውን በስልክ ቁጥር +251911 406845 ወይም ዶ/ር አሰፋ ስሜን በስልክ ቁጥር +251 911 228193 ማናገር ይችላሉ።ይችላሉ።የጥናት ስነ ምግባርን በተመለከተ ጥያቄ ካለዎት በአዲስ አበባ ዩኒቭርስቲ ጤና ሳይንስ ኮሌጅ የጥናት ስነምግባር ግምገማ ቦርድ ሃላፊ የሆኑትን ዶ/ር ሰለሞን አባይን በስልክ ቁጥር 0941 222169 ማናገር ይችላሉ፡

Annex 2: Questionerries

English Version

A1. Your name: ${your_name}Is this your name?	◯ Yes ◯ No
A2. Enter your name below. *Please record your name*	
B. Current date and time.	Day : Month :Year:
Is this date and time correct?	◯ Yes ◯ No
C. Record the correct date and time.	Day : Month :Year:
D. QR Code *Scan the QR code that appears on the ID card given at enrollment.* *If you are unable to scan the QR code enter the number on the next screen. Confirm that the scanned code matches the code on the cardbefore advancing.*	
This is what the QR code scanner found: ${barcode_scanned}Is that correct?	◯ Yes ◯ No
D1. Record the correct number on the ID card. Confirm that the QR code matches the code on the card before advancing.	
D2. Does the QR code match what is on the paper? QR code: ${barcode}	◯ Yes ◯ No

E1. Region:	◯ Tigray ◯ Afar ◯ Amhara ◯ Oromiya ◯ Snnp ◯ Addis Ababa
E4. Locality:	
E5. Enumeration area	
E6. Structure number *Please record the structure number from the household listing form.*	
E7. Household number *Please record the household number from the household listing form.*	
E8. CHECK: Have you already sent a form for this structure andhousehold? *DO NOT DUPLICATE ANY FORM UNLESS YOU ARE CORRECTING AMISTAKE IN AN EARLIER FORM.*	◯ Yes ◯ No
WARNING: Contact your supervisor before sending this form again.	
E9. CHECK: Why are you resending this form? *Choose all that apply.*	☐ I am correcting a mistake made on a previous form ☐ The previous form disappeared from my phone without being sent ☐ I submitted the previous form and my supervisor told me that it was not received ☐ Other reason(s)
F. Mother's name *Enter the mother's name exactly as it appears on the ID card given atenrollment.*	
G. Is the mother present and available to be interviewed today?	◯ Yes ◯ No, unavailable ◯ No, died
H. Date of death *Probe well for the date/month/year of death. If the respondent doesnot know enter in Jan 1, 2030 for DNK*	Day : Month :Year:
Check here if respondent does not know the DAY	☐

Check here if respondent does not know the MONTH	
INFORMED CONSENT *Confirm that this woman, or caregiver if the woman has died, is willing toparticipate in the study.*	
I. Do you still consent to participate in the study?	
La. Caregiver's name *Enter the caregiver's name*	
M. Interviewer's name: ${your_name} *Mark your name as a witness to the consent process.*	
E2. Zone:	

Section 1 - Infant

Mothers: I would like to ask you some questions about the child/ren you gave birth to six months ago
Caregiver: I would like to ask you some questions about the child/ren you are taking care of.

In case of multiples, ODK will repeat questions in this section. Questions 2-28 will be asked about childrenfrom that recent pregnancy who are still alive. Questions 29-44 will be asked about any children) who has died since the last interview. Questions will be repeated for twins/triplets, etc.

01a. On what day and month did you give birth? *If the respondent cannot remember the exact date of birth remind her of the information you recorded in the QR code and ask her to confirm*	
01b. On what day and month was the child/ren born? *if the respondent cannot remember the exact date of birth let him/herknow the information you recorded in the QR code and ask him/her to confirm*	
Enter the date	Day : Month :Year:
You entered that the mother died on approximately ${respondent_death_lab}. That is before the date of birth on ${birthday_lab}. Go back and update these dates so that they are consistent.	
1A. How many children were in this pregnancy? (eg twin or triplet?) *Fill in the following from the ID card given at enrollment:*	◯ Single ◯ Twin ◯ Triplet + ◯ No response
I will now ask you some questions about the baby. If there was more than one child, we will start with the first child born. *ODK will repeat questions Q1b-Q27 for each child born in thispregnancy*	

Chid	
1D. Type name given to baby if name given. Otherwise, typeBABY *ODK Will repeat I for each child identified in H.*	
1B. Is ${child_name} a boy or a girl?	◯ Boy ◯ Girl ◯ No response
1C. Is ${child_name} alive?	◯ Yes ◯ No ◯ No response

2. Has ${child_name}'s birth ever been registered with the Woreda or Kebele?	◯ Yes ◯ No ◯ Do not know ◯ No response
3. Now I would like to ask you about foods that ${child_name} had yesterday during the day or at night. I am interested in whether your child had the item I mention evenif it was combined with other foods or liquids. *Yesterday, refers to the period of time the child woke up yesterdaymorning to the time the child woke up today, including any drinks or food consumed overnight*	

4a. Yesterday during the day or at night did ${child_name} drink:
1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
A) Breast milk	◯	◯	◯	◯
Milk – powdered or fresh animal milk? (such as Nido)	◯	◯	◯	◯
C) Infant formula (such as Plan, S-26)?	◯	◯	◯	◯
D) Yogurt?	◯	◯	◯	◯

4b. Yesterday during the day or at night did ${child_name} drink:
1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
A) Plain water	◯	◯	◯	◯
B) Fresh juice or unsweetened juice drinks	◯	◯	◯	◯
C) Clear broth	◯	◯	◯	◯
D) Tea, with no honey or sugar added	◯	◯	◯	◯
E) Gruel (atmit) with no sugar, or honey added	◯	◯	◯	◯
) Fenugreek (abish) with no sugar, or honey added	◯	◯	◯	◯
G) Thin porridge (aja soup)	◯	◯	◯	◯
H) Any other non-sweetened liquids?	◯	◯	◯	◯

4bi. Yesterday during the day or at night did ${child_name} drink:

1 = Yes 0 = No -88 = Do not know -99 = No response				
	1	0	-88	-99
H) Sugar-sweetened juice, juice drinks soft drinks, soda, or fizzy drinks? (e.g. Runi)	○	○	○	○
I) Honey-sweetened juice or juice drinks	○	○	○	○
J) Tea, with sugar added	○	○	○	○

K) Tea with honey added	○	○	○	○
L) Gruel (atmit) with sugar added	○	○	○	○
M) Gruel (atmit) with honey added	○	○	○	○
N) Fenugreek (abish) with sugar added	○	○	○	○
O) Fenugreek (abish) with honey added	○	○	○	○
P) Any other sweetened liquids?				

4c. Yesterday during the day or at night did ${child_name} eat:
1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
) Any commercial fortified baby food like Fafa,Hilina, Cerilak, Plumpynut,Cerifam, Mother Choice?	○	○	○	○
) Injera, bread, rice, noodles, porridge, or other foods made from grains such as teff, oats, maize,barley	○	○	○	○
) Any foods made from beans, peas, lentils, or nuts?	○	○	○	○
D) Cheese or other food made from milk?	○	○	○	○

4d. Yesterday during the day or at night did ${child_name} eat:
1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside?	○	○	○	○
White potatoes, white yams, bulla, kocho, manioc, cassava, or any other foods made fromroots?	○	○	○	○
Any dark green, leafy vegetables like kale, spinach,	○	○	○	○

D) Ripe mangoes, papayas? E) Any other fruits or vegetables?				

4e. Yesterday during the day or at night did ${child_name} eat:
1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
A) Liver, kidney, heart, or other organ meats?	◯	◯	◯	◯
Any meat, such as beef, pork, lamb, goat,	◯	◯	◯	◯
chicken, or duck?	◯	◯	◯	◯
C) Eggs?				

Section 2 – Post-Natal I would like to ask some questions about where you gave birth and to follow up on how you are and checks for your health since delivery. I will also ask you some questions about the child you gave birth to six monthsago.	
45. Where did you give birth to ${first_child_name}?	◯ Her home ◯ Provider made home visit ◯ Other home ◯ Government hospital ◯ Government health center ◯ Government health post ◯ Other public sector ◯ Private hospital/clinic ◯ Other private medical sector ◯ NGO/Faith-based health facility ◯ Pharmacy / Drugstore ◯ Retail store ◯ Traditional healer / medicine ◯ Religious Treatment/Holy water ◯ Church / religious institution ◯ On the way to health facility/treatment ◯ Other ◯ Do not know ◯ No response
46. After ${first_child_name} was delivered, how long did youstay in the health facility? *If less than one day, record hours. If less than one week, record days.*	◯ Hours ◯ Days ◯ Weeks ◯ Do not know ◯ No response
Enter a value for "${facility_stay_lab}" *After ${first_child_name} was delivered, how long did you stay in thehealth facility?*	
47. After delivery, did you go to a maternity waiting home in thehealth facility?	◯ Yes ◯ No

	◯ Do not know ◯ No response
48. After delivery, how long did you stay at the maternity waitinghome? *If less than one day, record hours. If less than one week, record days.*	◯ Hours ◯ Days ◯ Weeks ◯ Do not know ◯ No response
Enter a value for "${maternity_stay_lab}" *After delivery, how long did you stay at the maternity waiting home?*	
49. Did you interview this respondent for the six-weekquestionnaire? *This question should not be read out to the respondent. The RE, you,must verify with information on the QR code*	◯ Yes ◯ No
50. Did any health worker extension worker visited you to checkon your health in the first two months after delivery?	◯ Yes ◯ No ◯ Do not know ◯ No response
51. How many days after birth did the health extension worker visit you? *If less than 24 hours, write 0 days No response: -99; Do not know: -88*	
52. Did you go visit a health extension worker in the first two months after delivery, either for yourself or for the baby?	◯ Yes ◯ No ◯ Do not know ◯ No response
53. How many days after birth did you go visit the health extension worker? *If less than 24 hours, write 0 days No response: -99; Do not know: -88*	
54. Did you go visit another professional healthcare provider other than an HEW in the first two months after delivery, eitherfor yourself or for the baby?	◯ Yes ◯ No ◯ Do not know ◯ No response
55. How many days after birth did you go visit the other professional healthcare provider? *If less than 24 hours, write 0 days No response: -99; Do not know: -88*	

	☐ Other ☐ No response
57. Have you had any health checks either for yourself or your baby since delivery (either by a HEW or other professional healthcare provider)?	◯ Yes ◯ No ◯ Do not know ◯ No response
58. Has the baby had any health checks since his/her birth (either by a HEW or other professional healthcare provider)?	◯ Yes ◯ No ◯ Do not know ◯ No response

60. At any health check after delivery (either by a HEW or other professional healthcare provider) did theprovider discuss:

1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
Breastfeeding	◯	◯	◯	◯
Not feeding water or other liquids before 6 months	◯	◯	◯	◯
Introducing food and liquids (other than breast milk)when the baby reaches 6 months of age	◯	◯	◯	◯
Giving a variety of foods when the baby startsfeeding after 6 months	◯	◯	◯	◯
Giving animal source foods specifically (e.g. eggs, milk, meat, fish)	◯	◯	◯	◯
How often to feed foods	◯	◯	◯	◯
Not feeding sugar-sweetened beverages	◯	◯	◯	◯

61. Since your baby's birth, has any health care provider measured your baby's:

1 = Yes 0 = No -88 = Do not know -99 = No response

	1	0	-88	-99
Weight	◯	◯	◯	◯
Length of height	◯	◯	◯	◯
Around their upper arm	◯	◯	◯	◯

	◯ Do not know ◯ No response
Enter a value for "${when_method_lab}"	
Thank the respondent for her time and update the ID card *Before you leave, update the ID card, including information on whetherthe baby or mother is still alive.*	
FU1Ya. Date of one-year interview *Enter Jan 1, 2030 if no date scheduled for upcoming interview*	Day : Month :Year:
FU1Yb. Did the respondent refuse future follow-up?	◯ Yes ◯ No
T. Location *Take a GPS point near the entrance to the household. Record locationwhen the accuracy is smaller than 6m. GPS coordinates can only be collected when outside.*	
U. Did you have to step away from the respondent's home to take the GPS reading?	◯ Yes ◯ No
V. Take a photo of the QR code. *Make sure you have taken a picture of the full page and not just the QRcode image and number*	
QUESTIONNAIRE RESULT	
W. How many times have you visited this household to interviewthis female respondent?	◯ 1st time ◯ 2nd time ◯ 3rd time
X. What language was this interview conducted in?	◯ English ◯ Amharic ◯ Afan Oromo ◯ Tigrigna ◯ Sidamigna ◯ Wolayitigna ◯ Afar ◯ Somali ◯ Kefigna ◯ Other
Y. Was a translator used for this interview?	◯ Yes ◯ No

Z. Questionnaire result	◯ Mother completed ◯ Caregiver completed form ◯ Not at home ◯ Postponed ◯ Refused ◯ Partly completed ◯ Incapacitated ◯ Mother dead, no caregiver ◯ Respondent moved ◯ Household moved ◯ Mother absent for indefinite period ◯ Interview date exceeded eligibility window

Amharic Version

ኢትዮጵያ ክትትል ጥናት:— ድህረ ወሊድ የክትትል መጠይቅ						
ተ.ቁ	**ጥያቄዎችና ማጣሪያዎች**	**አማራጭ መልሶች/ ኮዶች**				**መቼ ይጠየቃል**
ክፍል 1፡ መለያ						
A	**ስም:** [የመረጃ ሰብሳቢ ስም] **ይህ ስምሽ ነው?**	አዎ ..... 1 የለም 0				Always
	ስምሽን እዚህ መዝግቢ *እባክሽ ስምሽን መዝግቢ*	የመረጃ ሰብሳቢ ስም				If A=0
B	**የአሁኑ ቀንና ሰዓት** [ኦዲኬ በስክሪኑ ላይ ሰዓትና ቀኑን ያሳያል] **በኦዲኬ ስክሪኑ ላይ የሚታየው ቀን እና ሰዓት ትክክል ነው?**	አዎ ..... 1 የለም 0				Always
C	**ትክክለኛውን ቀን እና ሰዓት መዝግቢ።**	እለት	ወር	ቀን	ዓ/ም	If B=0
		ጊዜ	ሰዓት	ደቂቃ	ጠዋት/ ከሰዓት	
D	**QR ኮድ** *በምልመላ ወቅት በተሰጠው መለያ ካርድ ላይ የሚገኘውን የQR ኮዱን ስካን አድርጊ።* **አረጋግጪ: የመጨረሻዎቹ 4 ቁጥሮች ከባለ ሁለት አሃዙ የቆጠራ ቦታ ኮድ እና በካርዱ ላይ ካሉት ሁለት ቁጥሮች ጋር ተመሳሳይ ነው?** *ተመሳሳይ ካልሆነ ባለሁለት አሃዙን የመለያ ቁጥር በቀጣዩ ስክሪን ላይ መዝግቢ።*	አዎ ..... 1 የለም 0				Always
D0	**QR ኮድ** *በምልመላ ወቅት በተሰጠው መለያ ካርድ ላይ የሚገኘውን የQR ኮዱን ስካን አድርጊ።* የQR ኮዱን ስካን ማድረግ ካልቻልሽ በቀጣዩ ስክሪን ቁጥሩን መዝግቢ። ወደ ቀጣይ ጥያቄ ከማለፍሽ በፊት ስካን ያደረግሽው ኮድ በካርዱ ላይ ካለው ኮድ ጋር ተመሳሳይ መሆኑን አረጋግጭ።	QR ኮድ				If D=0
D1	**በመለያ ካርዱ ላይ ያለውን ትክክለኛ ቁጥር መዝግቢ።** **ወደ ቀጣዩ ክፍል ከማለፍሽ በፊት የመዘገብሽው ኮድ ቁጥር በካርዱ ላይ ካለው ቁጥር ጋር ተመሳሳይ መሆኑን አረጋግጪ።**					If D=0

ኢትዮጵያ ክትትል ጥናት:— ድህረ ወሊድ የክትትል መጠይቅ			
ተ.ቁ	**ጥያቄዎችና ማጣሪያዎች**	**አማራጭ መልሶች/ ኮዶች**	**መቼ ይጠየቃል**
D2	**ስካን ያደረግሽው/የመዘገብሽው የQR ኮድ በወረቀቱ ላይ ካለው ቁጥር ጋር ተመሳሳይ ነው?**	አዎ.....1 የለም.....0	
E1	ክልል		Always
E2	**ዞን/ ክፍለ ከተማ**	*ODK የተመረጠውን ክልል መሰረት በማድረግ ተገቢውን የዞኖችን/የክፍለ ከተሞችን ዝርዝር ያመጣል።*	Always
E3	**ወረዳ**	*ODK የተመረጠውን ዞን/ክፍለ ከተማ መሰረት በማድረግ ተገቢውን የወረዳዎች ዝርዝር ያመጣል።*	Always
E4	**የቀበሌ/አካባቢ ስም**	*ODK የተመረጠውን ወረዳ መሰረት በማድረግ ተገቢውን የቀበሌ/የአካባቢስም ዝርዝር ያመጣል። አንድ አማራጭ ብቻ ሊኖር ይችላል ።*	Always
E5	**የቆጠራ ቦታ**	*ODK የተመረጠውን የቀበሌ/የአካባቢ ስም መሰረት በማድረግ ተገቢውን የቆጠራ ቦታ ዝርዝር ያመጣል።*	Always
	ODK should calculate the full participant ID as either ID=[D] or ID=[E5_D1]		
E6	**የግቢ/ቤት ቁጥር** *እባክዎ በመልስ ሰጭ መለያ ካርድ ላይ የሚገኘውን የግቢ ቁጥር መዝግቢ።*		Always
E7	**የቤተሰብ ቁጥር** *እባክሽ በመልስ ሰጭ መለያ ካርድ ላይ የሚገኘውን የቤተሰብ ቁጥር መዝግቢ።*		Always
E8	**አጣሪ፡ ከዚህ ቀደም ለዚህ ግቢ/ቤት የተሞላ ቅጽ ልከሻል?** ከዚህ በፊት የተሞላ ቅጽ ላይ የተፈጠረን ስህተት ለማስተካከል ካልሆነ በቀር ተጨማሪ ቅጽ አትላኪ።	አዎ..... የለም.....0	Always
	ማስጠንቀቂያ: ይህን ቅጽ በድጋሚ ከመላክሽ በፊት ተቆጣጣሪሽን አናግሪ።		E8 = 1
E9	**አጣሪ: ይህንን ቅጽ በድጋሚ መላክ ያስፈለገበት ምክንያት ምንድነው?** *ሁሉንም ምላሾች መዝግቢ።*	የበፊቱ ቅጽ ሲሞላ የተፈጠረን ስህተት ለማስተካከል..... የተሞላው ቅጽ ሳይላክ ከስልኩ ውስጥ ስለጠፋ..... በመጀመሪያ የተላከው ቅጽ እንዳልደረሰ ተቆጣጣሪው ስለነገረኝ..... ሌላ ምክንያት (ግለጪ)..... 4	E8 = 1

ኢትዮጵያ ክትትል ጥናት:— ድህረ ወሊድ የክትትል መጠይቅ			
ተ.ቁ	**ጥያቄዎችና ማጣሪያዎች**	**አማራጭ መልሶች/ ኮዶች**	**መቼ ይጠየቃል**
F	**የመልስ ሰጭ ስም** *በምልመላ ወቅት በተሰጠው መለያ ካርድ ላይ የተመዘገበውን የመልስ ሰጭዋን ስም በትክክል መዝግቢ።*	የመልስ ሰጭ ስም	Always
G	**መልስ ሰጭ ለቃለመጠይቅ በዛሬው እለት ተገኝተዋል?**	አዎ..... 1 የለም፥አልተገኙም ..... 2 የለም፥አርፈዋል (ሞተዋል) 3	Always
H	**በሞት የተለዩበት ቀን** *በሞት የተለዩበትን ቀን/ወር/ዓመተ ምህረት ለማወቅ አውጣጪ።መልስ ሰጪ አላውቅም ካሉ '21-05-2022' መዝግቢ።*	ቀን ወር ዓ/ም	G=3
የስምምነት ማረጋገጫ *መልስ ሰጭ በጥናቱ ለመሳተፍ አሁንም ፈቃደኛ እንደሆኑ አረጋግጪ።*			
I	በጥናቱ ለመሳተፍ አሁንም ፈቃደኛ ነዎት?	አዎ.....1 የለም 0	G=1
M	**የመረጃ ሰብሳቢ ስም [በጥያቄ A የተመዘገበው የመረጃ ሰብሳቢ ስም]** *የስምምነት ሂደቱ በትክክል መካሄዱን ለመመስከር ስምሽ [ቀደም ሲል የተመዘገበው የመረጃ ሰብሳቢ ስም] ላይ ምልክት አድርጊ።*		I=1 OR K=1

<u>ክፍል 3 —ህጻን</u>

ከ6 ወር በፊት የወለዱትን/ደትን ህጻን የተመለከቱ ጥያቄዎችን ልጠይቅዎ እፈልጋለሁ።

የወለዱት መንታ/ሶስት ከሆነ ኦዲኬ በዚህ ክፍል ያሉትን ጥያቄዎች ደጋግሞ ያመጣልሻል።
ከጥያቄ 2-28 ያሉት ጥያቄዎች የሚመለከቱት ከመጨረሻው እርግዝና የተገኙና በአሁኑ ወቅት በህይወት የሚገኙ ህጻናትን ሲሆን ፤
ጥያቄ 29 ፣30 & 34 ደግሞ የመጨረሻው ቃለ መጠይቅ ከተደረገ በኋላ በሞት የተለዩትን ህጻናትን የሚመለከቱ ናቸው።

49	**ለዚህች መልስ ሰጭ ከወለዱ በኋላ በስድስተኛው ሳምንት አካባቢ ቃለመጠይቅ አድርገሽላቸው ነበር?** ማስታወሻ፡ይህ ጥያቄ በእናንተ የሚሞላ እንጅ ለመልስ ሰጭ የምትጠይቂውአይደለም። *የQR ኮዱን በመመልከት አረጋግጪ።*	አዎ ..... 1 የለም 0	I=1
49b	**በመጨረሻው እርግዝና የወለዱት ስንት ልጆችን ነበር (ለምሳሌ፡-መንታ ወይም ሦስት)?**	አንድ ..... 1 መንታ 2	49=0

	በጥናቱ በተካተቱበት ወቅት ከተሰጠው መለያ ካርድ ላይ በመመልከት በትክክል መዝግቢ:	ሦስት + ... 3 መልስ አልተሰጠም ..... -99	
49c	**በአሁኑ እርግዝና [መጀመሪያ/ሁለተኛ/ሶስተኛ] የተወለደው ልጅ የእርግዝና ውጤት/ሁኔታ ምን ነበር?**	በህይዎት የተወለደ..... 1 ሞቶ የተወለደ ..... 2 የጨነገፈ(በተፈጥሮ የወረደ)..... 3 ውርጃ (የተቋረጠ ጽንስ)..... 4 መልስ አልተሰጠም……..-99	49=0
01a	**በየትኛው ቀን እና ወር ነበር የወለዱት?** *ፍንጭ: መልስ ሰጭ ትክክለኛውን ቀን ካላስታወሱ በQR ኮዱ ላይ ተመዘገበውን ቀን በማስታወስ እንዲያረጋግጡልሽ ጠይቂ።*	ቀን: ወር: ዓ/ም: መልስ አልተሰጠም ..... -99	I=1
1A	**በመጨረሻው እርግዝና የወለዱት ስንት ልጆችን ነበር (ለምሳሌ፡-መንታ ወይም ሦስት)?** *በጥናቱ በተካተቱበት ወቅት ከተሰጠው መለያ ካርድ ላይ በመመልከት በትክክል መዝግቢ።*	አንድ ..... 1 መንታ ..... 2 ሦስት + ... 3 መልስ አልተሰጠም ..... -99	49=1
	አሁን ደግሞ የተወለደውን/ችውን ልጅ በተመለከተ ጥቂት ጥያቄዎችን እጠይቅዎታለሁ። የወለዱት ከአንድ በላይ ከሆነ ከመጀመሪያው/ዋ ልጅ በመጀመር አንዳንድ ጥያቄዎችን ልጠይቅዎ እፈልጋለሁ። ***ኦዲኬ ከጥያቄ Q1b-Q27 ያሉትን ጥያቄዎች ከመጨረሻው እርግዝና ለተወለዱ ሁሉም ልጆች ደጋግሞ ያመጣልሻል።***		Q1B to-27 repeated for each living child
1D	**ለህጻኑ/ኗ ስም ከወጣለት/ላት ስሙን/ሟን መዝግቡ። ስም ካልወጣለት/ላት 'Baby' በማለት መዝግቢ።።** *ኦዲኬ በጥያቄ 1A ለተለዩ ሁሉም ልጆች ጥያቄ 1D'ን ደጋግሞ ያመጣል።*	ስም:	I=1 or K=1 repeated for every child in 1A
1B	**[የህጻኑ/ኗ ስም] ወንድ ነው ወይስ ሴት ነች?**	ወንድ ..... 1 ሴት ..... 2 መልስ አልተሰጠም ..... -99	Repeat 1B for each child in 1A
1C	**[የህጻኑ/ኗ ስም] በህይወት አለ/ች?**	አዎ .....1 የለም ..... 0 መልስ አልተሰጠም ..... -99	Repeat 1C for each child in 1A

2	**የ[የህጻኑ/ኗ ስም] ውልደት በወረዳ ወይም ቀበሌ (ወሳኝ ኩነት) ተመዝግቧል?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99				Q1C= 1
3	**በመቀጠል [የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉት ምግቦችና ፈሳሾች ብቻውን ወይም ተደባልቆ መውሰዱን /ዷን እጠይቅዎታለሁ፡፡** *ትናንት ቀን ወይም ማታ የሚያመለክተው ህጻኑ/ኗ በትላንትናው እለት ጠዋት ከእንቅልፍ ከተነሳበት/ችበት እስከ ዛሬ ጠዋት ከእንቅልፍ እስከ ተነሳበት/ችበት ሰዓት ያለውን ጊዜ ያጠቃልላል።*					
4a	**[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉት ፈሳሾች ብቻውን ወይም ተደባልቆ ጠጥቷል/ለች:** A) **የጡት ወተት** B) **የዱቄት ወተት ወይም ትኩስ የእንስሳት ወተት? ለምሳሌ ኒዶ?** C) **የህጻናት ፎርሙላ ወተት (ለምሳሌ Plan, S-26)?** D) **እርጎ**	አዎ 1 1 1 1	የለም 0 0 0 0	አላውቅም -88 -88 -88 -88	መልስ አልተሰጠም -99 -99 -99 -99	Q1C= 1
4b	**[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉትን ፈሳሾች ብቻውን ወይም ተደባልቆ ጠጥቷል/ለች:** **A) ንጹህ ውሃ** **B) የፍራፍሬ ጭማቂ - ማጣፈጫ/ስኳር/ማር የሌለው** **C) ንጹኅ ሾርባ** **D) ሻይ - ስኳር/ማር የሌለው** **E) አጥሚት - ስኳር/ማር የሌለው** **F) አብሽ - ስኳር/ማር የሌለው** **G) ቀጭን ገንፎ(የአጃ ሾርባ)** **H) ሌሎች ማጣፈጫ ያልተጨመረባቸው ፈሳሾች?**	አዎ 1 1 1 1 1 1 1 1	የለም 0 0 0 0 0 0 0 0	አላውቅም -88 -88 -88 -88 -88 -88 -88 -88	መልስ አልተሰጠም -99 -99 -99 -99 -99 -99 -99 -99	Q1C= 1
4bi	**[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉትን ፈሳሾች ብቻውን ወይም ተደባልቆ**	አዎ	የለም	አላውቅም	መልስ አልተሰጠ	

	ጠጥቷል/ለች: **A) ስኳር/ማጣፈጫ የተጨመረበት ጭማቂ፥ ለስላሳ መጠጥ ወይም የታሸገ ጭማቂ፥ ሶዳ ወይም ጋዝ ያላቸው መጠጦች? (ለምሳሌ ራኒ ጁስ)** **B) ማር የተጨመረበት የፍራፍሬ ጭማቂ** **C) ሻይ - ስኳር የተጨመረበት** **D) ሻይ - ማር የተጨመረበት** **E) አጥሚት - ስኳር የተጨመረበት** **F) አጥሚት - ማር የተጨመረበት** **G) አብሽ - ስኳር የተጨመረበት** **H) አብሽ - ማር የተጨመረበት** **I) ማጣፈጫ የተጨመረባቸው ሌሎች ፈሳሾች?**	1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0	 -88 -88 -88 -88 -88 -88 -88 -88	ም -99 -99 -99 -99 -99 -99 -99 -99 -99	
4c	**[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉትን ምግቦች ብቻውን ወይም ተደባልቆ በልቷል/ለች:** A) **በፋብሪካ የተዘጋጀ የህፃናት ምግብ ለምሳሌ ፋፋ፥ህሊና ሴሪላክ፥ ሴሪፋም፥ማዘርስ ቾይዝ** B) **እንጀራ፥ዳቦ፥ሩዝ፥ገንፎ ወይም ከጥራጥሬ ለምሳሌ ከጤፍ፥ አጃ፥ በቆሎ ወይም ገብስ የተዘጋጁ ሌሎች ምግቦች?** C) **ከባቄላ፥ አተር፥ምስር ወይም ለውዝ የተዘጋጁ ምግቦች?** D) **አይብ ወይም ሌሎች ከወተት የተዘጋጁ ምግቦች**	አዎ 1 1 1 1	የለም 0 0 0 0	አላውቅም -88 -88 -88 -88	መልስ አልተሰጠም -99 -99 -99 -99	Q1C=1
4d	**[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉትን ምግቦች ብቻውን ወይም ተደባልቆ በልቷል/ለች:** **A) ውስጣዊ ክፍላቸው ቢጫ ወይም ብርቱካናማ የሆኑ ምግቦች ለምሳሌ**	አዎ 1 1	የለም 0 0	አላውቅም -88	መልስ አልተሰጠም -99 -99	Q1C=1

	ዱባ፥ካሮት፥ዝኩኒ ፥ ስኪር ድንች? B) የስራስር ምግቦች ለምሳሌ፡ድንች፥ ቡላ፥ ቆጮ፥ ካሳቫ ፣ ቦዬ (ያም) C) አረንጓዴ ቅጠላ ቅጠሎች ለምሳሌ ጥቅል ጎመን፥ስለጣ D) ማንጎ፥ፓፓያ (የበሰለ/ ጥሬ ያልሆነ) E) ሎሎች አትክልቶችና ፍራፍሬዎች?	1 1 1	0 0 0	-88 -88 -88 -88	 -99 -99 -99	
4e	[የህጻኑ/ኗ ስም] ትናንት ቀን ወይም ማታ የሚከተሉትን ምግቦች ብቻውን ወይም ተደባልቆ በልቷል/ለች: A) ጉበት፥ኩላሊት፥ልብ ወይም ሌላ የእንስሳ የውስጥ አካል B) ማንኛውም አይነት ስጋ ለምሳሌ የበሬ፥ አሳማ፥ጥጃ፥ፍየል የዶሮ ወይም የዳክዬ ስጋ C) እንቁላል? D) የደረቀ ወይም ትኩስ አሳ? E) ሌሎች ጠጣር፥ከፊል ጠጣር ወይም ፈሳሽ ምግቦች?	አዎ 1 1 1 1 1	የለም 0 0 0 0 0	አላውቅም -88 -88 -88 -88 -88	መልስ አልተሰጠም -99 -99 -99 -99 -99	Q1C=1
4f	ለመጀመሪያ ጊዜ ለ[የህጻኑ/ኗ ስም] ከጡት ወተት ውጭ ሌላ አይነት ምግብ በመደበኛነት መመገብ የጀመሩት ከስንተኛው እድሜው/ዋ ጀምረው ነው? *እድሜውን በወራት መዝግቢ። 0 መልስ ሊሆን ይችላል።*	------ወራት ገና አልጀመርኩም ..... -77 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99				QC1=1
	<u>ክፍል 4 – ድህረ - ወሊድ</u> *ከወሊድ በኋላ ስላለው የጤናዎ ሁኔታ እና ስለተደረገልዎ ምርመራ ልጠይቅዎ እፈልጋለሁ። በተጨማሪም ከስድስት ወራት በፊት የወለዱትን/ጂ ትን ልጅ የተመለከቱ ጥያቄዎችንም እጠይቅዎታለሁ።*					*I=1*
45	**የ[የህጻኑ/ኗ ስም]ን የወለዱት/ጂት የት ነው?**	በራሷ ቤት ..... 1 ሌላ ቤት ..... 2 የመንግስት ሆስፒታል ..... 3 የመንግስት ጤና ጣቢያ ..... 4 የመንግስት ጤና ኬላ ..... 5 ሌላ የመንግስት የጤና ተቋም ..... 6 የግል ሆስፒታል/ክሊንክ ..... 7 ሌላ የግል ህክምና ተቋም ..... 8 የመያድ/የእምነት ተቋማት የጤና ተቋም 9				I=1

		ሌላ ..... 96 መልስ አልተሰጠም ..... -99	
46	**[የህጻኑ/ኗ ስም] ከተወለደ በኋላ ለምን ያህል ጊዜ በጤና ተቋም ውስጥ ቆይተዋል?** *ከአንድ ቀን በታች ከሆነ በሰዓት መዝግቢ። ከአንድ ሳምንት በታች ከሆነ በቀናት መዝግቢ።*	ሰዓታት: ቀናት: ሳምንታት: አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	Q45=3-9
47	**ከወለዱ በኋላ በጤና ተቋሙወደሚገኝ የእናቶች ማቆያ ገብተው ነበር?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	Q45=3-9
48	**ከወለዱ በኋላ በእናቶች ማቆያ ለምን ያህል ጊዜ ቆይተዋል?** *ከአንድ ቀን በታች ከሆነ በሰዓት መዝግቢ። ከአንድ ሳምንት በታች ከሆነ በቀናት መዝግቢ።*	ሰዓታት፡ ቀናት: ሳምንታት፡ አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	Q47=1
50	**ከወለዱ በኋላ በነበሩት የመጀመሪያዎቹ ሁለት ወራት ውስጥ ለእርስዎ የጤንነት ሁኔታ ምርመራ ለማድረግ የጎበኘዎት የጤና ኤክስቴንሽን ሰራተኛ ነበር?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	Q49=0
51	**ከወለዱ ከምን ያህል ጊዜ በኋላ ነበር የጤና ኤክስቴንሽን ሰራተኛዋ የጎበኘችዎት?** *ከ24 ሰዓታት በታች ከሆነ 0 ቀናት መዝግቢ።*	ቀናት: አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	50=1
52	**ከወለዱ በኋላ በነበሩት የመጀመሪያዎቹ ሁለት ወራት ውስጥ ለእርስዎ ወይም ለልጅዎ የጤንነት ሁኔታ ምርመራ ለማድረግ ወደ የጤና ኤክስቴንሽን ሰራተኞች ሄደው ነበር?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	49=0
53	**ከወለዱ ከምን ያህል ጊዜ በኋላ ነበር ወደ ጤና ኤክስቴንሽን ሰራተኛዋ የሄዱት?** *ከ24 ሰዓታት በታች ከሆነ 0 ቀናት መዝግቢ።*	ቀናት: አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	52=1
54	**ከወለዱ በኋላ በነበሩት የመጀመሪያዎቹ ሁለት ወራት ውስጥ ለእርስዎ ወይም ለልጅዎ የጤንነት ሁኔታ ምርመራ ለማድረግ ከጤና ኤክስቴንሽን ሰራተኞች ሌላ ወደ ሌላ የሰለጠነ ባለሞያ ሄደው ነበር?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99	49=0

55	**ከወለዱ ከምን ያህል ጊዜ በኋላ ነበር ወደ ሌላ ጤና ባለሞያ የሄዱት?** *ከ24 ሰዓታት በታች ከሆነ 0 ቀናት መዝግቢ።*	ቀናት: አላውቅም ..... -88 መልስ አልተሰጠም ..... -99				54=1
56	**ከጤና ኤክስቴንሽን ሰራተኞች ሌላ የጎበኙት ባለሞያ ሞያው ምንድን ነበር? ሌላስ?** *(ሁሉንም ምላሾች መዝግቢ)* *የባለሞያውን አይነት ለመለየት በማውጣጣት የጠቀሱትን በሙሉ መዝግቢ።*	ዶክተር ..... 1/0 ጤና መኮንን ..... 1/0 ነርስ/ሚድዋይፍ ..... 1/0 የጤና ባለሙያ፥ሙያውን አላውቅም 1/0 የባህል ሃኪም ..... 1/0 ሌላ ..... 1/0 መልስ አልተሰጠም ..... -99				54=1
57	**ከወለዱ በኋላ ለእርስዎ ወይም ለልጅዎ ማንኛውም አይነት የጤንነት ሁኔታ ምርመራ (በጤና ኤክስቴንሽን ሰራተኛ ወይም ሌላ የሰለጠነ ባለሞያ) ተደርጎልዎታል?**	አዎ ..... 1 የለም ..... 0 አላውቅም ..... -88 መልስ አልተሰጠም ..... -99				49=1
60	**ከወሊድ በኋላ በነበረ ማንኛውም ጉብኝት ወቅት (በጤና ኤክስቴንሽን ሰራተኛ ወይም ሌላ የሰለጠነ ባለሞያ) ባለሞያዎቹ ስለሚከተሉት ጉዳዮች አወያይትዎት ነበር:** ጡት ስለማጥባት ከ6 ወር በፊት ውሃ ወይም ሌላ ፈሳሽ አለመመገብ ህጻኑ/ኗ 6 ወር ሲሞላው/ላት ከጡት ወተት ሌላ ተጨማሪ ምግብና ፈሳሽ ስለማለማመድ ህጻኑ/ኗ 6 ወር ከሞላው/ላትና መመገብ ከጀመረ/ች በኋላ የተለያዩ የምግብ አይነቶችን ስለመመገብ የእንስሳት ተዋጽኦ ስለመመገብ ለምሳሌ እንቁላል፥ ወተት፥ስጋ ወይም አሳ ምን ያህል ጊዜ ምግብ መመገብ እንደሚገባ የስኳር ይዘት ያላቸውን ለስላሳ መጠጦች እንደማይሰጥ	አዎ 1 1 1 1 1 1	የለም 0 0 0 0 0 0	አላውቅም -88 -88 -88 -88 -88 -88	መልስ አልተሰጠም -99 -99 -99 -99 -99 -99	50=1 OR 52=1 OR 54=1 OR 57=1 OR 58=1
61	**ልጅዎ ከተወለደበት/ችበት ጊዜ አንስቶ በማንኛውም የጤና ባለሞያ የሚከተሉት ልኬቶች ተደርገውለታል/ላታል:** ክብደት ቁመት/ርዝመት የላይኛውን የክንድ ዙሪያ ልኬት	አዎ 1 1 1	የለም 0 0 0	አላውቅም -88 -88 -88	መልስ አልተሰጠም -99 -99 -99	50=1 OR 52=1 OR 54=1 OR 57=1 OR 58=1
መልስ ሰጭን ስለሰጡኝ ጊዜ በማመስገን በመለያ ካርዱ ላይ ያሉትን መረጃዎች አስተካክለኝ መዝግቢ። *ከመውጣትሽ በፊት፣ በመለያ ካርዱ ላይ የሚገኙትን መረጃዎች እናትየው እንዲሁም የተወለዱት ልጆች በህይወት መኖራቸውን ጨምሮ አስተካክለኝ መዝግቢ።*						
የክትትል ቃለመጠይቅ ቀጠሮ ቀን						

ቀኑን ከአዲኬ ላይ በማረጋገጥ ለመልስ ሰጭ አሳውቂ						
FU1 Ya	**የአንደኛ ዓመት ቃለምልልስ ቀጠሮ ቀን** *መልስ ሰጭ ለቀጣዩ መጠይቅ ቀጠሮ ካልተስማሙ ታህሳስ 22, 2022 አስገቢ።*	ቀን	ወር	እለት	ዓ/ም	I=1
FU1 Yb	**መልስ ሰጭ ለቀጣይ ቀጠሮ ፈቃደኛ አልሆኑም?**	አዎ .....1 የለም 0				FU1 Y=01 /01/2 030
PN001	**እርስዎን ማግኘት የምንችልበትን ስልክ ቁጥር ሊሰጡኝ ይችላሉ?**	አዎ ..... 1 የለም 0				K=1
PN002	**በየትኛው ስልክ ቁጥር ነው እርስዎን ማግኘት የምንችለው?**	ስልክ ቁጥሩን መዝግቢ:				PN001=0
PN003	**የነገሩኝን ስልክ ቁጥር ይደግሙልኛል?**					PN002=value
መገኛ እና የQR ኮድ ፎቶ ማንሳት						
N	**መገኛ** *የቤተሰቡ መግቢያ በር ላይ በመሆን የጂ. ፒ. ኤስ ንባብ ነጥብ ውሰጂ። ልኬቱን የሚያሳየው ከ6 ሜ. በታች ከሆነ ቦታውን መዝግቢ።* *የጂ. ፒ. ኤስ ንባብ መውሰድ የሚቻለው ከቤት ውጭ ብቻ ነው።*	መገኛ ቦታውን መዝግቢ				Always
O	**የጂ. ፒ. ኤስ ንባብ ለመውሰድ ከመልስ ሰጭዋ ቤት ርቀሽሄደሻል?**	አዎ ..... 1 የለም 0				Always
O1	**የ QR ኮዱን ፎቶ አንሺ** **የኮድ ቀጥሩን ብቻ ሳይሆን ሙሉ የመለያ ካርዱን ፎቶ ማንሳትሽን አረጋግጪ።**	**ፎቶ አንሺ** **የተሻለ ጥራት ያለውን ፎቶ ምረጪ**				Always
የመጠይቁ ውጤት						
P	**ይህችን ሴት መልስ ሰጭ ለማግኘት ይህንን ቤተሰብ ምን ያህል ጊዜ ነው የጎበሽው?**	አንድ ጊዜ. ..... 1 ሁለት ጊዜ ..... 2 ሶስት ጊዜ..... 3				Always
Q	**ቃለመጠይቁ የተካሄደበት ቋንቋ ምንድን ነበር?**	እንግሊዝኛ..... 1 አማርኛ..... 2 ኦሮምኛ ..... 3 ትግርኛ ..... 4 ሲዳምኛ ..... 5 ወላይትኛ..... 6				Always

		አፋርኛ ..... 7 ሶማልኛ ..... 8 ካፍኛ ..... 9 ሌላ 96	
R	**ቃለመጠይቁን ለማካሄድ አስተርጓሚ ተጠቅመሻል?**	አዎ .....1 የለም 0	Always

Annex 3: Curriculum Vitae of Primary Advisor & Principal Investigator

SHORT CURRICULUM VITAE – Primary Advisor

Solomon Shiferaw (MD MPH PhD) Associate Professor	**School of Public Health, College of Health Sciences, Addis Ababa University** **E-mail:** solomonshiferaw@gmail.com or **soloshi@yahoo.com** **Tel No: +251 911 40 68 45** **P.o.Box: (1000) 9086** **Addis Ababa, Ethiopia**

Nationality – Ethiopian **Date of birth**: Nov 29, 1975 **Education**

Mar 2012 – Oct 2018: PhD from Maastricht University, The Netherlands.

Sept 2002 – July 2004: Masters Degree in Public Health from Addis Ababa University, Ethiopia.

Sept 1994 – July 2000: Doctor of Medicine from University of Gondar, Ethiopia.

Professional Experience

Sept 28, 2017 – Present: Associate Professor, School of Public Health, Addis Ababa University

Jan 2006 – Sept 27, 2017: Assistant Professor in the School of Public Health, Addis Ababa University.

Current responsibilities: teaching public health nutrition to undergraduate medical students as well as graduate students in Public Health. Advising students of MPH and PhD on various public health issues.

Ongoing projects:

Performance Monitoring for Action (PMA-Ethiopia) - PMA-Ethiopia is a survey project designed to generate both cross-sectional and longitudinal data on a variety of reproductive, maternal, and newborn health indicators that can inform both national and regional governments. Support is provided by the Bill & Melinda Gates Institute for Population and Reproductive Health at the Johns Hopkins Bloomberg School of Public Health and funded by the Bill & Melinda Gates Foundation.

CURRICULM VITATE (CV) – Principal Investigator

Contact Information

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Marital status: Single
Nationality: Ethiopian
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Academic Background

- Currently rolled in the field of Masters of Public Health in public health nutrition at Addis Ababa University.
- Bachelor of Science in Medical Laboratory Technology from Addis Ababa University Tikur Anbessa College of Health Science in December 2020.
- Completed high school at Lideta Catholic Cathedral School from 2013-2016.
- Completed Primary School at Blue Bird School in 2013.

Skills

- **Computer:** Enough proficiency at SPSS, ODK, Excel, Word, Google Document & PowerPoint.
- **Analysis & Evaluation:** Good in assessing, interpreting and analyzing data.
- **Organizational:** Effective at time management and prioritizing tasks to achieve deadlines.
- **Interpersonal/Communication:** Strong team working, leadership and communication skills.
- **Language:** Very good both in Amharic & English.

Certifications

- **July 4, 2021** - Volunteer work at Rotaract Club.
- **June 9, 2021** – Course completion on Leveraging Primary Health Care Systems from International institute for primary health care-Ethiopia
- **October 20, 2018** - Certificate of participation from International Youth Fellowship.

Experience

- I have worked as an event, team coordinator and note taker at U^3 Systems work Int. for USAID Ethiopia Health Office Industry days on for two months.
- I have worked as a data collector by ODK tool for a seven days Survey on knowledge, attitude and practice towards non-pharmaceutical interventions and vaccine of Covid-19 prevention that was conducted in collaboration between Global One Health, Ohio State University and Addis Ababa University.

- I had a team training program (TTP) which involved data collection and entry on ODK of MCH, census, school health intervention, nutritional assessment, community and environment intervention.
- I have taken a two days training on Reproductive Health Commodities Security Training by United Nations Population Fund (UNFPA) and Addis Ababa University.
- I have worked as a data collector and focus group discussion facilitator for conducting survey on infant cereals, family cereals and soya bean products market study at New Horizon Industry Technology for one month.
- I have worked as a medical laboratory technologist at a Luna clinic for over 1 year.
- I have given free service at Summit Health center for more than a month.
- I did my internship program at Tikur anbessa specialized hospital and St.Paul Millennium Hospital.
- I was a member of the Charity club and Interact club in my secondary school.

References

- Alemayehu Nigatu : Lecturer at Addis Ababa University; Department of medical laboratory science, Managing partner at U3 Systems Work international
  Addis Ababa, Ethiopia

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  Phone no. +251921785003
- Dr Ahadu Workneh (MD, Gyn/Obs ,URPS Subspeciist) : Chief Academic, Research and Training Director at St Peter Specialized Hospital
  Addis Ababa, Ethiopia

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