



IMPROVING MATERNAL NUTRITION PRACTICES:

Consultation and Trials of Improved Practices with Women and their Families in Ethiopia's Oromia, Amhara and SNNP Regions

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By:

 Insight. Action. Change.
THE MANOFF GROUP

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ACKNOWLEDGMENTS

This formative research study represents a substantial undertaking to bring human-centered design principles to the development of Growth through Nutrition's program activities, especially communications. This research was planned to bolster what is known about adolescents' and women's dietary and other nutrition-related practices and most importantly to obtain their insights into how they can improve those practices. The implementation of Trials of Improved Practices (TIPs) which allows potential program participants the opportunity to shape program recommendations and activities provides an important glimpse into what women find acceptable and feasible to implement. Both the findings and the experience with the process offer many lessons. We acknowledge the contributions of the many individuals and organizations supporting this work, including:

The Manoff Group: research design, training, technical support, and final report-writing.

BDS- Center for Development Research (BDS-CDR): data collection, transcriptions, analysis and information presentation.

Save The Children: management, technical oversight, and technical reviews

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The findings and opinions presented in this report do not necessarily represent those of USAID, Growth through Nutrition or its implementing partner organizations.

ABBREVIATIONS

ANC	Antenatal Care
BF	Breastfeeding
BMI	Body Mass Index
ENGINE	Empowering New Generations to Improve Nutrition and Economic Opportunities
IFAS	Iron Folic Acid Supplementation
IRB	Institutional Review Board
NMVHH	Nutritionally Most Vulnerable Households
NVHHs	Non-vulnerable Households
PNC	Postnatal Care
SBC	Social and Behavior Change
SBCC	Social and Behavioral Change Communication
SCI	Save the Children International
SCUS	Save the Children USA
SNNPR	Southern Nations, Nationalities and People's Region
TIPs	Trials of Improved Practices
VHHs	Vulnerable Households
USAID	United States Agency for International Development

BACKGROUND

I. Maternal Nutritional Status in Ethiopia

Women in Ethiopia suffer from high rates of malnutrition indicated by their thinness, short stature and micronutrient status. While daily life is affected by poor nutritional status, the stress is particularly problematic during and immediately following pregnancy. During childbearing women have higher nutritional requirements than normal making them especially vulnerable and deepening their already poor nutritional status if dietary intake during pregnancy and lactation cannot keep up with the increased needs. Ethiopia has more underweight women than any other sub-Saharan African country: 22% of reproductive-age women and 29% of adolescents 15-19 years of age are underweight (low BMI). Anemia in women especially among pregnant and lactating women is a public health problem: 24% of women aged 15-49 years have anemia and 29% of pregnant and lactating women are anemic. The poor nutritional status of women is affecting their children. Thirteen percent of newborns with reported birth weights were low birth weight (weighed less than 2.5 kg). Similarly, 13 % of infants younger than 6 months are stunted (short for their age). These early deficits reflect intrauterine growth retardation and put the child at greater risk of illness and continued poor growth, borne out in Ethiopia's high rate of childhood stunting (38%) (CSA & ICF, EDHS, 2016).

The causes of poor maternal nutrition are many, but proximal to this outcome are poor diets and eating patterns. Understanding and working with women and their families to improve the immediate household environment and the woman's practice is of high importance to improving the overall situation of women's nutrition.

2. Maternal Nutrition and Dietary Behaviors in Ethiopia

There have been many studies that describe women's diets and dietary practices in different parts of Ethiopia. What is summarized below is information from two studies that serve as background for the research described in this report.

In 2014, the USAID/ENGINE project undertook extensive qualitative research on maternal nutrition in the Amhara, Oromia, Tigray and SNNP regions. Key findings include:

- Pregnant and lactating women generally eat what everyone else in the household eats—with no special considerations given to their increased needs. Women shared meals at the same time and from the same common plate with their family members. The women felt sharing the same meal affirmed family unity and cohesion.
- Men and women nearly unanimously perceived the practice of preparing food just for oneself and eating alone as culturally inappropriate for women. Women's sense of selflessness, and their concern with how others view them, obliged them to share limited family food resources with everyone in the household. They also prioritized others over themselves when allocating quantities and types of food. In rural Ethiopia, society's expectation for women to sacrifice for others is especially strong.

- There were variations in practices in the amounts of food and when it was consumed. Generally, women eat three meals a day (morning, mid-day and evening); some supplemented their three meals with snack(s), while others reported eating only two meals a day. The first trimester of pregnancy was a period when many women reported eating smaller portions of food as well as a more limited variety of food because they were experiencing nausea and/or had aversions to specific foods early in pregnancy. Some women also reduced their food intake and avoid specific foods later in pregnancy in an effort to avoid delivering “fat” babies, which they believed would make their deliveries more difficult. Known in the nutrition literature as “eating down,” this practice has been reported previously in Ethiopia and other countries.
- Most pregnant and lactating women reported not regularly consuming an adequate diversity of foods. Their diets consisted primarily of legumes (pulses) and grains in the form of bread, pasta and *injera* (made from combinations of grains with or without *teff*). Women’s consumption of animal-source foods was infrequent. When they were available, eggs appeared to be the most commonly consumed animal-source food, while meat and poultry were available mainly on holidays. The amount of vegetables and fruit in the diet fluctuated based on seasonal availability. Breakfast was particularly limited in diversity: pregnant and lactating women reported that their typical breakfast consisted only of caffeinated beverages and *injera* [Note: Appendix I contains a glossary of Ethiopian food].
- Several factors affected dietary diversity and the quantities of food consumed. The first was the availability of foods to the household with high-quality foods available only occasionally. The second was the nausea and food aversions experienced during the first trimester of pregnancy. The third was fasting which is practiced by the Orthodox and Muslim religions, although the timing and types of restrictions vary between the religions. The USAID/ENGINE research had insufficient information to provide clear insights on fasting practices. Some insights are found in the Birth Cohort Study (See below).
- The only time that women appeared to consume more or special foods was during the postpartum recuperation period (the first 20-40 days after delivery) when families strived to ensure that women received special beverages and foods believed to help them recover their strength and improve breastfeeding. Husbands, for example, reported making an effort to slaughter a cow, sheep, or goat for their wives soon after delivery. Grandmothers reported preparing special, enriched broths, stews, and drinks believed to help new mothers regain their strength and to produce more breast milk for their infants. Following this period of recuperation, while many lactating women reported feeling hungrier than usual, and some reported increasing their food intake through more frequent “snacking”, lactating women generally did not report significantly changing their diets after the recuperation period. The one exception was an extra effort by lactating women and their families to ensure that she consume beverages

throughout the breastfeeding period that are believed to increase breast milk production and produce thicker, more nutritious breast milk.

Supporting the 2014 qualitative research on maternal diets are findings from an ENGINE quantitative cohort study of 4,680 pregnant women in Oromia region. This research reports:

- That about half the women are eating a smaller amount of food during pregnancy than they do normally and that they generally eat the same type of food; about 20% of women report adding different foods to their diets while 20% report eating a smaller variety.
- The majority of Orthodox women observe some fasting during their pregnancy. One quarter of Orthodox pregnant adolescents (15-19 years old) don't fast and in general fasting is less rigorous among pregnant adolescents. Three-quarters of the Orthodox women who observe fasting during pregnancy forego animal source foods. Ten percent said they do not fast during pregnancy and others observe fasting regimes only during part of each day.
- Over 85% of pregnant women who are Muslim report fasting during the month of Ramadan.
- The most common foods that pregnant women reported avoiding were sugar cane due to a fear of developing complications during labor and nutrient dense foods such as collard greens, eggs, meat, cheese, milk and bananas.
- More Muslim than Orthodox women report that there are foods that are encouraged during pregnancy. The most common food encouraged for Muslim women across age groups was meat followed by honey, barley, milk and eggs. Orthodox women reported being encouraged to eat barley (in different forms) followed by milk, meat, butter and red *teff*. Non-nutrient-dense foods (false banana, gruel and soft drinks) were also encouraged.

3. Goals and Objectives for the Maternal Nutrition Study

Under the USAID/Growth through Nutrition project, a new qualitative inquiry was designed to advance the basic understanding of the socio-cultural context of maternal nutrition. The inquiry built on work from the USAID/ENGINE project with the intention of focusing on societal expectations around women's eating practices including religious-based fasting, practical challenges that women face in terms of access to nutrition foods, , physiological challenges such as nausea, the important role of family, and women's own knowledge and beliefs about food and nutrition-related practices. The new USAID/ Growth through Nutrition research is designed to provide Growth through Nutrition with feasible ways to help women, including adolescents, improve their dietary practices during pregnancy and lactation within this given socio-cultural context. Specifically, this research centers on implementing a methodology called *Trials of Improved Practices* (TIPs) which consists of three household visits to selected women

during which a trained researcher sits with a woman to review, choose and try out pro-nutrition practices she is not currently using. Insights gained from these trials then form the basis for defining practical, tailored maternal nutrition behaviors and the social and behavior change (SBC) programming needed to support the practice of the behaviors. The SBC interventions identified through this research will be a combination of communication and *non*-communication interventions that, together, ultimately help adolescent girls and pregnant or lactating women adopt improved practices that will impact their well-being and that of their child.

The objectives of the TIPs research on maternal nutrition are to:

- 1) identify specific improved nutrition practices for defined situations during pregnancy and lactation, including adolescence;
- 2) define the conditions under which the women found it possible to implement improved practices. (For example, increasing the amount and types of food, reducing workload); and,
- 3) understand further the importance of intra-family communication and support, particularly between husband and wife.

RESEARCH METHODS

This study employed Trials of Improved Practices (TIPs), a mixed-methods research methodology that generates insights into current behaviors and their determinants, and assesses, with potential program participants, their willingness and ability to try new, improved practices and continue the use of new behaviors. The methodology relies on a highly consultative process with research participants, with significant dialogue and negotiation to help identify practices that fit into their routines and life style and then allows the participants to try the recommended practices, making modifications as needed. In this way the voices of potential participants are included in program design.

In the case of the present research, the participants were all pregnant or breastfeeding women, including adolescent girls between the ages of 15 and 19 years old, who live in the USAID/Growth through Nutrition project's zone. All recommended practices, were evidence-based behaviors that help to improve maternal nutrition outcomes.

I. The TIPs Methodology

TIPs is a mixed-methods research methodology developed by The Manoff Group that has been used extensively during the past 30 years to allow program participants to try practices and products prior to their introduction on a large scale. The methodology consists primarily of qualitative methods but in nutrition work also uses a quantitative methodology, the 24-hour recall and food frequency record, to understand the amounts and types of foods participants are consuming. TIPs has been validated and adopted by the World Bank, UNICEF and other global actors working in nutrition, health, and other development sectors. In the present study, the TIPs methodology was designed to be conducted in one phase, over three household visits with pregnant or breastfeeding women or adolescents as follows:

- Visit #1: The first visit entails an interview during which the researcher administers 24-hour food recall and food frequency questionnaires and a semi-structured interview guide to explore current nutrition practices, the household setting and a participant's specific circumstances that may influence her dietary practices.

Post-visit analysis: After the first visit concludes, the research team analyzes the recall and food frequency and the interview to identify problem areas in the existing practices and opportunities to improve these practices within the actual circumstances of the research participant. Preliminary decisions are made by the researcher in consultation with the supervisor about the practices that can be discussed with the participant to improve her nutrition.

- Visit #2: With the analysis of the information collected during visit #1 in hand, the researcher returns to the household on the following day for a second visit. During this visit the woman receives feedback on the findings of the first visit. The researcher spends time discussing and exploring with the woman what she believes she can do to improve her practices and she is offered suggestions for how to improve her nutrition situation. True

dialogue and negotiation takes place between researcher and participant, and others in the household if needed, around feasible ways to mitigate gaps and improve practices. The outcome of this visit is an agreement on a few improved practices that the participant is willing to try for about a week.

- **Visit #3:** The researcher returns to the same household one week later during the third and final household visit. During this visit, the research explores the participant's perceptions about the practices she tried, what worked and the benefits, what did not work, and why. The semi-structured interview also explores the participant's intentions to continue with the practices. Another 24-hour food recall and seven-day food frequency record are administered during this third visit in order to see if the changes made an overall improvement to the diet.

Figure 1: At-a- Glance: TIPs for Improving Maternal Nutrition

<p>Visit 1: Assessment</p> <ul style="list-style-type: none"> ▪ Exploration with the woman about health and current practices including activity levels and fasting and reasons for them; ideas about foods; ▪ Household food security and water and sanitation access ▪ 24 hour food recall and seven-day qualitative food frequency questionnaire for the previous week <p>Visit 2: Discussion and Negotiation of Trial(s) follow-up on the following day</p> <ul style="list-style-type: none"> ▪ Counseling on optimal practices and discussion about the findings of the assessment visit ▪ Discussion of issues and how woman feels about optimal practices and gaps in her practices ▪ Her ideas about how to close dietary or other gaps—what has to happen for her to try a new practice? ▪ Suggestions from the menu of practices to try ▪ Negotiations with woman about the practice(s) to try and consultation with anyone else in the family who may sanction and support the practice <p>Visit 3: Follow-up after about 8 days</p> <ul style="list-style-type: none"> ▪ Did the mother try the practice; did she succeed in using the practice; did she modify the practice? ▪ What were the pros and cons of using the practices? (24 hr. food recall and food frequency questionnaire) ▪ Who in the family sanctioned and/supported her using the practice? ▪ How did she feel about using the practice? ▪ Will she continue the practice; will and how will she talk to others about the practice?

2. Areas of Inquiry and Research Instruments

The major areas of inquiry of the research were:

- a. Notions of food properties/categorizations during different stages of pregnancy and lactation
- b. Pregnancy:
 - Early pregnancy—specific actions to manage nausea and maintain a healthy/basic diet
 - 2nd and 3rd trimesters—specific ways to improve food quantity and diversity

- If the woman is fasting, look at what she can do in order to improve optimal nutrition practices.
- IFA supplementation—do they have IFA tablets; willingness to take; experience taking
- c. Lactation:
 - First month+/BF newborn: improve quantity of food/liquids and diversity
 - BF the older infant/child: continued healthy diet
 - If the woman is fasting, look at what she can do in order to improve optimal nutrition practices.
 - IFA supplementation—have they taken and would they continue if they have tablets leftover from pregnancy or were given more tablet
- d. Sanctioning/Supporting: Improved approaches and timing for a couple to discuss and identify specific actions by the woman, her husband, or other family members to increase the woman's access to and consumption of greater quantities of more balanced diet.

The data collection instruments were designed to satisfy the research objectives with regard to the specific needs of the three TIPs visits and the five different physiological conditions of women (adolescence, first trimester pregnant, second and third trimester pregnant, lactating during first six months post-partum and lactating beyond six months postpartum). As indicated below eleven instruments were prepared in three local languages: Amharic, Afan Oromo and Sidama for the respective woredas where these are the predominant language.

- Instrument 1: Recruitment and consent form
- Instrument 2: Kebele characteristics
- Instrument 3: TIPs 24-hour recall first and third visits for all participants
- Instrument 4: TIPs first and third Visits: Food frequency for all Respondents
- Instrument 5: TIPs First visit for Pregnant Women
- Instrument 6: TIPS First visit for pregnant adolescents
- Instrument 7: TIPS First visit for breastfeeding women
- Instrument 8: TIPs Analysis guide
- Instrument 9: Menu of practices to try
- Instrument 10: TIPs Second visit: Counseling for all respondents
- Instrument 11: TIPs Third visit

3. Ethical Considerations

The maternal TIPS protocol and the instruments for the study—including the recruitment and consent form— were reviewed and approved by Save the Children/US's Research and Evaluation Ethics Board. A support letter was obtained from Ethiopia's Federal Ministry of Health (FMOH) with the proviso that this is not academic research, rather part of Growth through Nutrition's formative program assessment.

Basic ethical principles on human subjects were adhered to in all the stages of study, from subject selection, to interviewing and data management. Those principles are: (1) respect for individuals' autonomy and protection of people with diminished autonomy (2) beneficence—at

all times do no harm and maximize all possible benefits; (3) justice—distribute equal research benefit and burden of the research.

Human subject protection principles were incorporated into the consent form and process to inform potential participants about the study, the time required by them to participate in the study, and to mitigate any discomfort they may experience during the study. Potential participants were always allowed the opportunity to opt out of participation.

The field staff was trained on the basic principles of health research ethics in order to ensure that all the data collection procedures are done in accordance with ethical standards. The interviews were carried out in comfortable and private places. All participants were given unique identifiers so their names were not used on forms. Personal identifiers associated with study participants were kept with great care: completed data forms were locked and password protected.

4. Study Sites

The TIPs study sought to have a purposeful, small, but representative sample of women and their households across the project's major regions. Oromia, Amhara & SNNPR were selected. Tigray, the other region where Growth through Nutrition operates, was not included because the staff felt that Tigray conditions were represented within a sample from the three regions named. Study sites within the regions were chosen using food security and religion as criteria because these factors are major determinants of dietary practices. Using the government's food security status classification and the ranking of women's nutrition status, two woredas were purposively selected in each region: one food secure and the other food insecure. From each woreda one "typical" kebele (or kebele clusters) was purposively selected with the exception of Bilo Boshe in Oromia where two kebele were selected to ensure an adequate sample across the three major Ethiopian religious groups.

Table I shows the six woreda selected and the predominant religious affiliation of their populations. The three major religions in the country are represented: Orthodox Christian, Protestant Christian, and Muslim.

Table I: Selected Woredas and Number of Kebele

Region	Food secure woreda (# kebele), predominant religion(s)	Food insecure woreda (# kebele), predominant religion
Amhara	Dembia (1) <i>Orthodox Christian</i>	West Belesa (1) <i>Orthodox Christian</i>
Oromia	Bilo Boshe (2) <i>Protestant Christian</i>	Arsi Negele (1) <i>Muslim</i>
SNNP	Malga (1) <i>Protestant Christian and some Muslims</i>	Cheha (1) <i>Muslim</i>

5. Sample Size and Recruitment of Study Participants

The study participants were selected based on their household vulnerability ¹ to nutritional insults (vulnerable and non-vulnerable) and the woman's physiological status (pregnant, lactating). Moreover, to address the wide range of physiological conditions, nutritional requirements and dietary practices among women of different ages during pregnancy and lactation, study participants were segmented into five categories: pregnant adolescents (15-19 years), pregnant women in their first trimester, pregnant women in the 2nd - 3rd trimester, lactating women with children less than 6 months of age, and lactating mothers with children 6-12 months of age.

In this study plan, a total of 113 eligible pregnant adolescents and pregnant and lactating women were to be recruited as illustrated in Table 2.

Table 2: Expected Sample from the Three Regions Based on Household Vulnerability Status

Region		Amhara		Oromia			SNNPR		Total
Woreda		Dembia	W Belesa	ANegele	BiloBoshe	BiloBoshe	Melga	Cheha	
# of Kebele		1	1	1	1	1	1	1	7
Pregnant Adolescent (15-19 any trimester)	VHHs	1	1	1	1	1	1	1	7
	NVHHs	1	1	1	1	0	1	1	6
Pregnant (first trimester)	VHHs	2	2	2	2	1	2	2	13
	NVHHs	2	2	2	2	0	2	2	12
Pregnant (2-3 trimester)	VHHs	2	2	2	2	1	2	2	13
	NVHHs	2	2	2	2	0	2	2	12
Nursing Newborn (0-4 months old)	VHHs	2	2	2	2	1	2	2	13
	NVHHs	2	2	2	2	0	2	2	12
Nursing (5-12 months old)	VHHs	2	2	2	2	1	2	2	13
	NVHHs	2	2	2	2	0	2	2	12
Total Respondents		18	18	18	18	5	18	18	113

6. Consent Process

The study participants were recruited prior to data collection. At the time of recruitment an initial informed consent was obtained by the SCI field staff responsible for the recruitment phase. At the time of the interview an additional signed informed consent form was obtained by the researcher. In the case of illiterate study participants, all information was conveyed verbally to the participant and verbal consent was secured. In the case of adolescents, in addition to obtaining their informed consent, the research teams also obtained parental or partner consent

¹Nutritionally Most Vulnerable Households (NMVHHs) which are households with food gap for more than 3 months and with a member in the first 1,000 Days

for the adolescents to participate in the study. Additional verbal consent was obtained from each study participant in order to record interviews.

7. Research Team, Training, and Instrument Pretesting

Prior to beginning the research, SCl contracted a local research team to conduct the interviews and the data analysis. The TIPs research team was composed of a senior investigator and three team supervisors (who have a nutrition or health background and experience on health and nutrition surveys) and six household investigators. The research team was divided by region. Each regional team was comprised of three people: the male supervisor (who also functioned as a household investigator) and two female household investigators. The household investigators were selected carefully to ensure that they spoke the respective regional languages.

The training of the TIPs household investigators and supervisors was conducted over six days (August 7-12, 2017) in Addis Ababa. A nutrition expert from The Manoff Group, in collaboration with a local nutrition consultant, facilitated the training and field testing. The first three days of the training focused on the research instruments, the rationale for the questions and improving their phrasing and meaning, a careful review of the 24 hour dietary food recall and food frequency record and interviewing techniques with role plays. The instruments had been translated into three local languages (Amharic, Afan Oromo and Sidama) prior to the training by the experts who know the respective languages. Back translation from local languages to English was not done. However, during the training, the data collectors checked translation consistencies between English and local language versions.

The last three days were allocated for field practice, an instrument pre-test and revision of the instruments. Participants were taken to Mojo, a nearby district in Oromia region, to practice the data collection and to pre-test all the instruments for each of the five segments of participants. Due to heavy rain, the practice was of household visits 2 and 3 was not ideal, but each investigator was able to pretest a complete set of the instrument. At the end of each day, the team debriefed with the nutrition consultants who helped the investigators understand the tools and processes in greater detail and resolve their difficulties. The final half-day session was held to make changes to the instruments based on the pre-test and to prepare all of the supplies needed by each team.

8. Data Collection

The TIPs investigations were conducted during approximately a one-month period from August 15 to September 10, 2017. The field work in Amhara and SNNPR was completed in 24 days while Oromia took an additional 3 days because of the additional interviews in the extra kebele.

9. Data Quality Assurance Mechanisms

During the household investigations, the supervisors oversaw the work and provided feedback after they reviewed forms. The supervisors supported the analysis of the first visit to the woman to prepare the recommendations for the trials. The positive practices and nutrition problems were identified and accordingly recommendations crafted based on the menu of practices (Annex A). The supervisors were tasked with checking the completeness of investigators notes on daily basis, asking that missing information be obtained on a subsequent household visit.

Following the fieldwork, the information from each woman and household visit was reviewed by the field supervisors, and SCI SBCC regional and Addis level managers and was completed and/or verified with the respective data collectors. Information was entered into Word, Excel or SPSS. During analysis, for categorical and numeric variables frequencies were run and information checked for logical errors and missing data elements. To facilitate data management, aggregation and analysis, the research team used the following Microsoft Office applications and software:

- **Word files:** All information on the eleven instruments was entered into Microsoft Word.
- **Excel:** A template was prepared for analysis purposes to summarize the qualitative information from the trials by geography, socio-demographic variable, physiological status, household vulnerability status, and other variables.
- **SPSS:** The socio-demographic variables and some categorical variables which were drawn from the Word files and Excel summary sheet were re-entered into SPSS to facilitate easy analysis and aggregation.
- **24-hour food recalls:** Were to be analyzed using a local software package containing the nutrient value of Ethiopian foods.

All information entered in Word and Excel was re-read for contextual understanding. Frequency and cross-tabulations were done to check variations between different demographic, socio-economic and other variables important to programming decisions.

FINDINGS

The findings of the study are presented to address each main research objective. The information describing women's current practices comes from information obtained during the first household interview. This description is followed by the trial or TIPs done during the second and third visits. Findings are presented for the five main physiology based participant segments: pregnant adolescent, pregnant women in the first trimester, pregnant women in 2nd and 3rd trimester, lactating women with less than 6 months old infant, lactating women with an infant between 6 and 12 months of age. The findings are presented first with the generalities across the entire group and then differences within the group based on a particular characteristic (age, religion, region, educational status, employment status, food security and household vulnerability status) are noted.

I. Description of Study Sites and Participants

A. Description of the Study Sites

The study sites were purposely selected in order to represent food secure and food insecure woredas. Accordingly, the study participants were almost evenly divided between food secure and insecure areas: 54 were women from food insecure woredas (West Belesa, Cheha and Arsi Negelle) and 59 mothers were selected from food secure woredas (Dembia, Malga and West Bilo Boshe). In summary, the majority of the kebeles are comprised of small clusters of homes; three are more consolidated communities. The main livelihood in all kebeles is farming. Seven kebele have one predominant religion (Orthodox Christian, Muslim or Protestant); BiloBoshe's Boneya Soreso has several religions represented. All kebeles have a variety of government offices and business and the majority have at least one active NGO working in development actions. Two of the kebele have electricity and piped water.

B. Study Sample

During the field work some of the investigators encountered problems engaging the women who had been recruited prior to their arrival in the kebele. While the overall sample size of 113 was maintained, as well as the total women from each region, a few totals in the participant segments changed (Table 3).

- The number of pregnant adolescents decreased from 13 to 12. In SNNP region, the two adolescent girls in Cheha woreda were not available. In Malga woreda, one additional adolescent from VHH was recruited. In Arsi Negele, both adolescents were found to be from VHH, rather than one from a NVHH.
- The number of pregnant women in the first trimester decreased from 25 to 22.
- The number of pregnant women in their 2nd-3rd trimesters increased from 25 to 28.

Table 3: Actual Sample

Region		Amhara		Oromia		SNNPR		Total
Woreda		Dembia	W Belesa	ANegele	Bilo Boshe	Melga	Cheha	
# of Kebele		1	1	1	2	1	1	7
Pregnant Adolescence (15-19 any trimester)	VHHs	1	1	2	2	2	0	8
	NVHHs	1	1	0	1	1	0	4
Pregnant (first trimester)	VHHs	0	2	3	3	1	3	12
	NVHHs	3	2	2	1	1	1	10
Pregnant (2-3 trimester)	VHHs	2	2	1	3	4	2	14
	NVHHs	3	2	2	2	1	4	14
Nursing Newborn (0-6 months old)	VHHs	2	2	2	3	5	3	17
	NVHHs	2	2	2	3	1	2	12
Nursing (6-12 months old)	VHHs	2	2	2	3	2	1	12
	NVHHs	2	2	2	2	0	2	10
Total Respondents		18	18	18	23	18	18	113

The sample size for some of the trials is affected by the timing of the visits compared with the beginning and ending of the Orthodox fasting period in some of the woreda. It is important for the integrity of the trials that women be under the same dietary regime or custom throughout the 1-2 week trial period. It happened that the study period coincided with most of the Orthodox Christian fasting period (August 7-22) but not completely. Many women changed their dietary regime from a fasting to a non-fasting/celebration regime during the week-long TIP or they changed from a celebratory situation to their normal diets. This meant that some of the changes they made in their diet, especially related to animal source foods for example were difficult to attribute to the trial. The areas affected by this change in fasting pattern were the two woredas in Amhara and one woreda in SNNPR. Twenty-four women sampled changed between visits one and three. In order not to discount the entire experience, each practice in the trial was considered separately as to whether it was affected by fasting. Table 4 below illustrates the particular dietary characteristics over the study period and the number of women encountered in each on visit one and three. When the results for the individual behavioral trials are reported, the total number of participants will vary based on whether they were offered the practice to try and if a change in their dietary status might have affected their practice of the recommendation.

Table 4: Number of the sample affected by fasting and holiday patterns

Region Woreda	Women with different dietary patterns between Visits 1 and 3	Remarks
Amhara-Dembia	18	<ul style="list-style-type: none"> TIPs Visit #1: 17 women were fasting; not eating animal products. 2 of these women went from morning until 2/3 pm without eating food while the other 15 continued with non-meat foods during the day. 1 adolescent was not fasting. TIPs Visit #3 for all 18 women was done after the fasting period ended and people were celebrating a holiday, eating more and more animal products than usual.
Amhara-West Belesa	4	<ul style="list-style-type: none"> TIPs Visit #1: 1 pregnant and 3 lactating women reported abnormal days for their food consumption TIPS Visit#3: All 18 women returned to their normal dietary practices.
Oromia-Arsi Negele	0	<ul style="list-style-type: none"> TIPs Visit #1 & TIPs Visit #3 were done during normal times.
Oromia-Bilo Boshe- Jawis	0	<ul style="list-style-type: none"> TIPs Visit #1 & TIPs Visit #3 were done during normal times. 2 women were fasting on Wednesday and Friday, but it was constant across the TIP.
Oromia- BiloBoshe Boneya Soreso	1	<ul style="list-style-type: none"> TIPs Visit #1 and Visit #3: One pregnant adolescent was not fasting in Visit 1, but fasting in visit #3 There is no dominant religion in the area.
SNPPR-Malga	0	<ul style="list-style-type: none"> TIPs Visit #1 and TIPs visit #3 were done during normal time.
SNNPR – Cheha	1	<ul style="list-style-type: none"> TIPs Visit #3 One lactating woman reported an abnormal day

C. Description of the Study Sample

The study sample is evenly divided across the three regions and across the kebele. A few more women were sampled in Oromia to balance religious representation. These women were selected from Boneya Soksa in West Bilo Boshe, Oromia. Table 5 presents the demographic characteristics of the sample by region. In summary:

- The ages of the women in the study range from 15 – 40. The average age of the sample is 25 years. However, this average is skewed because of the large segment of adolescents purposefully recruited. Of the non-adolescent women, one third are between 20 and 24 years of age and two-thirds are 25 and above. Oromia has a slightly younger group of women and SNNPR a slightly older group.
- Slightly more women are living in households considered to be nutritionally vulnerable meaning they experience poor food security for at least a three month period. The balance of vulnerable and non-vulnerable households shifts slightly between regions: the Amhara sample has more vulnerable households and SNNPR has more non-vulnerable households.
- The religious affiliation of the sample is fairly evenly split between the three major religious groups, although Orthodox Christian representation is highest and Muslim representation lowest. Virtually all women in Amhara are Orthodox Christians while half of the sample in Oromia and SNNPR are Protestants with others split between Muslims and Orthodox Christians.
- Almost all women in the study are married except four women in Amhara region.
- The majority of women in the sample are either housewives or farmers. All of the women in Oromia classified themselves as farmers and the majority of women in SNNPR classified themselves as housewives. About one third of the women in Amhara classified themselves as traders while only a few did so in the other regions.
- Across the entire sample half of the women have never been to school, one third have some primary education and a few have completed primary school. One tenth of the sample has higher than a primary level education.

Table 5: Socio-Demographic Characteristics of the Study Samples

Variables	Three regions' aggregate (n=113)		Amhara (n=36)		Oromia (n=41)		SNNPR (n=36)	
	# of women	%	# of women	%	# of women	%	# of women	%
Age of Women								
15- 19 years	13	11.5	4	11.1	5	12.2	4	11.1
20- 24 years	39	34.5	13	36.1	20	48.8	6	16.7
25-40 years	61	54	19	52.8	16	39	26	72.2
Household Vulnerability Status								
VHHs	63	55.8	16	44.4	24	58.5	23	63.9
NVHHs	50	44.2	20	55.6	17	41.5	13	36.1
Women's Religion (n=110)								
Orthodox	41	38.9	34	94.4	6	14.6	5	13.9
Muslim	31	27.4	2	5.6	15	36.6	13	36.1
Protestant	38	33.6	0	0	20	48.8	18	50
Marital Status (n=109)								
Married	105	96.3	32	88.9	41	100	32	100
Not married	4	3.7	4	11.1	0	0	0	0
Womens' Occupation (n=93)								
Farmer	43	38.1	2	5.6	41	100	1	2.8
Trader	20	17.7	13	36.1	0	0	6	16.7
Housewife	28	42.5	19	52.8	0	0	29	80.6
Other	2	1.8	2	5.6	0	0	0	0
Womens' Education								
None	58	51.3	15	41.7	26	63.4	17	47.2
Some primary	36	31.9	10	27.8	10	24.4	16	44.4
Completed primary	8	7.1	4	11.1	2	4.9	2	5.6
Some secondary	6	5.3	5	13.9	1	2.4	0	0
Completed secondary	3	2.7	1	2.8	1	2.4	1	2.8
Some college	1	0.9	1	2.8	0	0	0	0
Completed college	1	0.9	0	0	1	2.4	0	0

In addition to selecting vulnerable and non-vulnerable woreda, the sample in each woreda was purposively selected to include women in vulnerable and non-vulnerable households. In actuality, the sample has more women classified as being from vulnerable (63) than non-vulnerable (50) households although in some cases researchers found the distinction hard to make as most households were very poor. However, looking at the characteristics of women residing in these different conditions reveals important differences.

- All women who are not married (even though a small number) reside in a vulnerable household.
- While most of the women in the sample work at either farming or trading, more vulnerable households have women at home (many in SNNPR) than in non-vulnerable households. In vulnerable households just under half of the women work outside the home while well over half of the women in non-vulnerable households work outside the home.
- In vulnerable households well over half of the women (60%) have never been to school while in non-vulnerable household under half of women (40%) have never been to school; 60% have at least some primary schooling.

Table 5: Household Vulnerability Status of Women by Their Marital, Occupational and Educational Status

Variables		Household vulnerability status		Total
		VHHs	NVHHs	
Women's marital status (n=109)	Married	57	48	105
	Unmarried	4	0	4
Women's occupation (n=113)	Farmer	25	18	43
	Trader	7	13	20
	Housewife	30	18	48
	Other	1	1	2
Women's education (n=113)	None	37	21	58
	Some primary	21	15	36
	Completed primary	2	6	8
	Some secondary	0	6	6
	Completed secondary	1	2	3
	Some college	1	0	1
	Completed college	1	0	1

2. Current Nutrition-Related Practices and Dietary Assessment

A. Nutrition-Related Beliefs and Practices of Study Participant Segments

Pregnant Adolescents

Current nutrition-related beliefs and practices of pregnant adolescents are fairly homogenous across regions although religious affiliation affects some practices and greatly influences fasting.

Most of the time, food purchasing is done by the adolescent although decision-making about purchases is done jointly with the husband or by the husband only. Most adolescents continue cooking duties with help from her mother/mother-in-law. A few adolescents say that while pregnant they are only engaged in light chores such as cooking sauce.

Adolescents say that during pregnancy they should eat small but frequent meals. Some mention that adolescents should eat 4-6 meals per day. Most of the adolescents know about snacks and define a snack as a piece of bread or roasted cereals (*Kolo*); “meals” smaller than the main meal.

Adolescents say that during pregnancy it is important to drink enough liquids such as water, milk, and soft drinks such as Pepsi Cola and that increasing fluids is not a problem.

- In Amhara adolescents stated that taking enough fluid helps the fetus move freely in the uterus. Some adolescents in Amhara consider local beer *tella*, good for the mother and the baby during pregnancy.

Most of the adolescents have heard of and have a definition for what constitutes a balanced diet. Most adolescents consider a balanced diet to include varieties of vegetables and fruits. Some mentioned that a balanced diet includes combinations of one or more foods such as egg, meat, vegetables, and fruits. Some defined it as eating something from every type of food. Adolescents associated eating a balanced diet with them become strong and delivering a healthy baby.

The adolescents said that there are no food items prohibited by pregnancy, although they mention that multiple times during pregnancy they change their dietary practices due to religious fasting periods recommended by priests and religious leaders. Some adolescents also report changing their diets during the rainy season to include foods available only during that season such as vegetables, especially leafy greens. They consider soup, fruits and other fluids good to consume during pregnancy. Some mention drinking *abish*, a fenugreek tea, during pregnancy to relieve their abdominal pain.

Pregnant Women

Current nutrition-related beliefs and practices of pregnant women are fairly homogenous across regions although religious affiliation affects some practices and greatly influences fasting.

About two-thirds of the women report currently attending ANC or attending during their last pregnancy.

- Attendance is lowest (fewer than half) among women living in Oromia (most of these women are Muslim).
- Those not attending ANC mention lack of knowledge about it, the distance to the health facilities, they hadn't gone because they didn't know they were pregnant--especially in the first trimester, and that they want to hide their pregnancy as long as possible as reasons.

Food purchasing is done by the women. Decision making about what to purchase varies. Most of the women across the three regions said that decisions about food purchase are made by themselves and some said decisions are made jointly with their husband. A minority of the women said that decisions about the food purchase are made by husbands like the adolescents reported. All women reported doing all of the cooking unless an older daughter might be available to help.

Most of the women believe that a balanced diet is one that contains many different types of food although the normal food groupings are not well understood. One woman considered a balanced diet as one that “*builds the body*”. When women were asked about what they would eat if they are asked to eat balanced diet, some said that they would eat different types of foods giving kale, potato, *shiro*, Mirinda, soup, and vegetables as examples and said they would not repeat foods at breakfast, lunch and dinner. One woman indicated pasta and bread as balancing a diet.

- Some women said that they didn't know what a balanced diet means and were unaware of the importance of eating different foods.

When women were asked to define a meal most of them, across the three regions, said a meal is eaten together with family members (e.g. *injera* and *wet*, *kocho* with some chili sauce).

- Some of the women said they didn't know the exact definition of a meal.

Most of the pregnant women know what a snack is: a meal that is smaller in size than those normally eaten with family. Taking a snack keeps one from being hungry between main meals. Examples of snacks are: *kola*, piece of *injera* with some *awaze* (pepper), banana, avocado, spaghetti, or a mango. Snacks are usually consumed in the late afternoon. Even though most women believe that a snack is eaten alone, some of the pregnant women consider that a snack can be eaten with the family members. A few women said that a snack is simply *injera* eaten during coffee ceremony.

- One woman in SNNPR said that she did not eat snacks because she could not afford it and another woman said she did not eat snacks because three meals were enough for her.

Most of the women know that pregnant women should eat more frequent meals than the rest of the family. Across all three regions most pregnant women believe that they should eat 3 or more meals (4 and 5 were mentioned). Some women mentioned small, frequent meals.

- Some of the women in SNNPR said that if food availability were not a problem they would eat more frequently. Few women mentioned they have no idea about the frequency with which a pregnant woman should eat.
- One woman in Amhara and one in SNNPR said that pregnant women should eat less than 3 meals a day.

Pregnant women believe that the fetus will get more food if they eat more. They know that if the pregnant woman does not eat enough food, she will be weak and sickly and so will the fetus. One woman said “*the fetus will be stunted*”. The pregnant women believe that getting enough food helps the fetus to be healthy, warms the fetus and prevents under-nutrition. One woman said the baby “*becomes beautiful*.”

- However, economic, and particularly cultural factors, hinder women from eating more frequently than other family members. Some women expressed that if they ate separately from their husband and the rest of the family, they would feel ashamed even if the husband and other family members approve it.

Almost all of the pregnant women believe that “enough” or an increased amount of fluid intake during pregnancy is not harmful to mother or fetus. A few women said that not enough fluids could cause constipation. Some women said that they did not know the exact amount of fluid that pregnant women should consume, while others said that the amount of fluid that a pregnant should drink depends on the season and if she feels thirsty. The women explained that in the hot season, women drink a lot of liquid, while in the cold season they drink liquids only when they eat food or when they are thirsty. Most of the women across the three regions said that women should drink from two to six glasses of water/fluid per day. Some women said that women should drink 1-2 litre of fluids/water per day.

Mirinda is the most frequently mentioned fluid considered by the women as a good drink during pregnancy. Most of the women also mentioned soup, milk, coffee, juice, *keneto* (local non-alcoholic beer), soft drinks generally and tea as very good fluids for pregnant women. Women equate drinking certain fluids as helping to produce blood or help the fetus move in the uterus: Mirinda, one glass of *tella*, a local beer, milk and soup are good for blood production. One woman added that these fluids also help during labor and delivery.

- Some women said that soft drinks are excellent but often unaffordable.

- Some women said it is not good / dangerous to drink beer during pregnancy. One woman mentioned dirty water as a bad for a pregnant woman.
- Some said it is good to avoid *areke*, local liquor.

Most women said that there are no food items prohibited by pregnancy, although they mention that multiple times during pregnancy they may change their dietary practices due to religious fasting periods recommended by priests, clergy or other religious leaders.

- Of note, however, is that often individuals held their own beliefs about the importance of avoiding certain foods: one woman in Oromia mentioned that if a pregnant woman eats meat or other foods, the fetus would be big in the uterus and would later make the delivery difficult. The same woman also said that vegetables and fruits such as avocado and orange may harm a pregnant woman.
- Some women in Amhara said that *Kolo*, roasted chickpeas, hot pepper and local liquor are not good for pregnant woman as it delays rupture of the membrane during labor and decreases blood in the body.
- One woman in SNNPR said that food from *enset* (false banana) will cause abortion.

The majority of pregnant women do not eat special foods; they report eating whatever is available in the house. Some women mentioned foods that are important to eat for the development of the fetus: meat, fruits, *telba* (flax seed), macaroni, mango, tomato, soup, *tella*, potato, vegetable, yoghurt, bread and milk. Moreover, many believe that *telba* (linseed/flax) relaxes women's uterus during delivery.

- Some women in Amhara said that it is good to eat *telba* with or without sugar, soup, and *teff* (red) around the end of the pregnancy in order to improve the elasticity of the uterus.

Breastfeeding Women

Current nutrition-related beliefs and practices of post-partum/lactating women are fairly homogenous across regions although religious affiliation affects some practices and greatly influences fasting. There are some regional differences related to special foods to support breast milk production.

Most of the mothers are not attending postnatal care.

- Those who attended mostly attended only within the 42-day period after delivery.
- Some of the women said that they received diet advice from health workers to eat vegetables, fruits, porridge, soup, and milk. Most of the women did not get advice from people other than health workers. Only one mother reported getting diet advice from her husband.

The women report doing the food purchasing and primarily deciding what will be purchased, although some women said that they decide this with their husbands. Cooking is done by the women with occasional help from an older daughter.

Across regions women define a meal as any food available in the house that is eaten together with family members.

- Definitions of a meal from a minority of women range from it being a balanced diet that can build the body to it being any food eaten when *injera* is served.

Most of the women consider a snack as a small amount of food eaten between main meals. One woman defined it as food eaten around 3 PM.

Most postpartum/lactating women describe a balanced diet as having many types of foods. Some women believed it refers to eating small amounts from each of the following: kale, root vegetable (e.g. beetroot), potato, sauce of ground legumes and cereals.

- A few women said that eating foods such as egg, meat, and kale constitute a balanced diet.

Many women believe that eating a variety of food will increase the amount and quality of their breast milk and will improve the health of the baby and the mother. Most of the women learn about eating a variety of foods from the health workers, although a few women said they learned this from the hotels and their neighbors.

Across all regions, women say that they feel hungry or very hungry after giving birth. However, women have a divided opinion on how frequently / how much food post-partum and lactating women need.

- Many women believe that the amount of food that lactating woman takes should be more than that of regular people. Some of the women across the three regions said that lactating woman should consume four meals per day as compared to other woman who consume 3 meals per day. Generally, women believe that if a woman eats more food, the baby will be big, healthy and beautiful and the mother will also be healthy.
- Some women believe that lactating women do not have to eat differently, that is, they can eat as they did prior to pregnancy, and they do not need an extra meal.

Most of the women across all regions say that lactating women can eat any food, there is no restriction outside of fasting. Foods women listed as good for the postpartum / lactating women include: egg recommended during lactation because it is good for the health of both the mother and the baby; *te/ba* (linseed/flax seed) is good for the health of the mother; in Amhara, women mentioned porridge served with butter or oils to rebuild and strengthen the backbone of the women; and most women believe that meat and milk are good for recuperation.

Most of the mothers report facing breastfeeding difficulty after delivery primarily related to limited breast milk production. Most women had ideas about what could be done to improve breast milk production.

- Most women from Amhara and Oromia region say soup made from different cereals (*mitin*, made from 12 different cereals) is good to eat to produce more breast milk.
- Many women in Amhara say that *tella*, local beer, is good for producing more milk. Others said *kolo*, a barley snack helps women produce more milk.

Most women feel that there is no harm to lactating women drinking a lot of liquid. Some feel that increased fluid consumption is good for breast milk production. Women are not of one mind about how much liquid a lactating women should consume.

- Most women believe that during lactation a woman should drink “more than a liter” a day; “10 cups of water per day”; “1-2 liters of water per day”.
- Some think a lower quantity is sufficient: for example, “three cups of water per day is enough”.
- Some women said they do not know the amount of fluids that lactating woman should drink.

Most mothers recommend the following drinks for postpartum and lactating women: *tella*, water, soups, soft drinks (Mirinda, Coke), tea and juices.

Some women said that it is forbidden to drink *areke*, local liquor, and beer as it is not good for the stomach.

Women indicate that the big change in dietary patterns during the lactation period comes from fasting.

- Those who are not under religious sanction to fast (mostly in SNNPR and Oromia) say that decisions to make a change in their diet are completely individual.
- In Amhara women say that the clergy (priests and holy fathers) teach the community what to eat and not to eat and they change their habits in accord, fasting during the entire period prescribed. Most women said that they could eat legumes in the place of meat during fasting periods. One of the women said they could use *kik*, a sauce of ground legumes.

B. Specific Nutrition-Related Beliefs and Practices Not Specific to a Study Segment

Fasting Practices

Although many study participants fasted during their pregnancy or lactation period, approximately 21%, or one out of five women were actively fasting during the study period. (Note due to the timing of the interviews many more had just finished a fasting period and were in a “celebratory” period).

- The majority of the women who were fasting live in Amhara, and a few live in Oromia. No woman was actively following a fasting regime in SNNPR during the study.
- All of those fasting were Orthodox Christians with the exception of one Protestant woman.
- Those actively fasting are represented in all physiological segments and are equally split between vulnerable and non-vulnerable households. While most women are older, one third are younger than 25, including two pregnant adolescents among those fasting.

All women said that fasting is a religious practice prescribed by the religious leaders and the churches. Fasting in this case (mostly among Orthodox Christians) does not mean the complete abstinence from food for a full day: rather, in three-quarters of the cases the women were abstaining from eating animal products (meat, milk, eggs and butter among others) only, and in a quarter of the cases they were abstaining from animal source foods or in some cases it seems from most foods for about 5-6 hours, but not all day. When those abstaining from animal products were asked about substituting non-animal protein and fats, the women believed that it is possible to use legume products.

- Some of the women in Amhara said that they are allowed to eat animal products during lactation or if they are sick.

Iron Supplementation

About two-thirds of the participants report currently attending ANC, or attending during their last pregnancy. Fewer than half of all the women who should be taking iron-folic acid supplements (IFAS) are taking them. [Note: all women who are pregnant and those up to 6 months post-partum should take IFAS].

- Almost three-quarters of the women who attend ANC are taking IFAS. IFAS compliance is lower early in pregnancy and following birth.
- Use of IFAS varied by the occupation of the woman. Three-quarters of the women who are traders took IFAS while just under half of those who were farmers took IFAS and one-third of homemakers took IFAS.
- Women not taking IFAS said they lack information about IFAS, they believe that they are healthy or they did not need IFAS.

- There are women who had taken IFAS, but stopped. Those women said that they believe IFAS is no longer important after giving birth, the initial dose of pills was enough, or, due to epigastria pain or high blood pressure they should not take IFAS.
- Some women taking IFAS report not taking it regularly because of side effects and forgetfulness.

Table 6: Attendance at ANC and Use of IFAS by Participant Segment

Variables	Total	Attending ANC		Taking IFAS		
		Number (Yes)	%	Number (Yes)	% All women	% Of those Attending ANC
Region						
Amhara	36	34	94	21	58	62
Oromia	41	17	41	16	39	94
SNNPR	36	23	64	14	39	61
Women's Physiological Status						
Pregnant adolescent	12	8	67	7	58	88
Pregnant 1st TM	22	12	55	8	67	67
Pregnant 2nd - 3rd TM	28	25	89	21	75	85
Lactating with infant < 6 months	29	14	48	8	28	57
Lactating with infant 6-12 months	22	15	68	7	32	47
Religion						
Orthodox	41	35	85	23	56	66
Muslim	31	15	48	10	32	67
Protestant	38	24	63	18	47	75
Household Vulnerability Status						
VHH	63	39	62	25	40	64
NVHH	50	35	70	26	52	74

Work during Pregnancy and Breastfeeding

Most women regardless of their pregnancy or lactation status report that they continue with no alteration a) their household chores (cooking, cleaning the house and clothes, caring for children), b) their outdoor activities (collecting firewood, looking after the cattle, fetching water, and going to the market), and c) work outside the home like trading. Thus, the majority of pregnant and lactating women work a long day with little rest. (The only exception is the period immediately following delivery).

- A minority of women report taking rest and decreasing their workload once pregnant. These women get support for household chores from older children, mothers and family members.

Most of the women receive advice about decreasing their workload for their health and their fetus's from many sources (health workers, other mothers, friends, fathers and husbands, and other family members). However, although widely acknowledged, practically women say husbands do not offer help because the social norm dictates that the household chores and some outdoors responsibilities are "reserved" for women.

C. Initial Dietary Assessments

To understand how the described practices translate to everyday dietary patterns and food intake, 24-hour dietary food recalls and a 7-day food frequency were taken with each participant. This section is an analysis of this information taken prior to the trial (on visit #1).

Meal Frequency

The majority of women consume at least three meals per day. The range of meal frequency (including snacks) is between 1 and 5 meals / day.

- Although only a few women eat fewer than three times a day, the highest proportion is in Oromia (note—there was no fasting there during the study period).
- Amhara has the high proportion of women eating more 4 – 5 times which could be related to the women in the sample there who were celebrating the breaking of their fast.
- SNNPR has the least number of women eating more than 3 times, although also few women eating fewer than 3 times.
- With only a few exceptions women who were traders or homemakers ate three times a day. The women who ate three or fewer times were usually the farmers.

About one quarter of the women report eating outside of family meal times. The highest proportion is in Amhara where just over half the women report eating at a time other than a family meal time.

Few women report eating more frequently during their pregnancy or lactation than they do when non-pregnant or lactating.

- One third of women report consuming less than before they became pregnant.
- About one-third of women report that they do not always eat when hungry. Lactating women report more than pregnant women that they are not eating when hungry, but about one third of pregnant women report this as well.

Figure 2: Pregnant women who eat less, same or more than before pregnancy

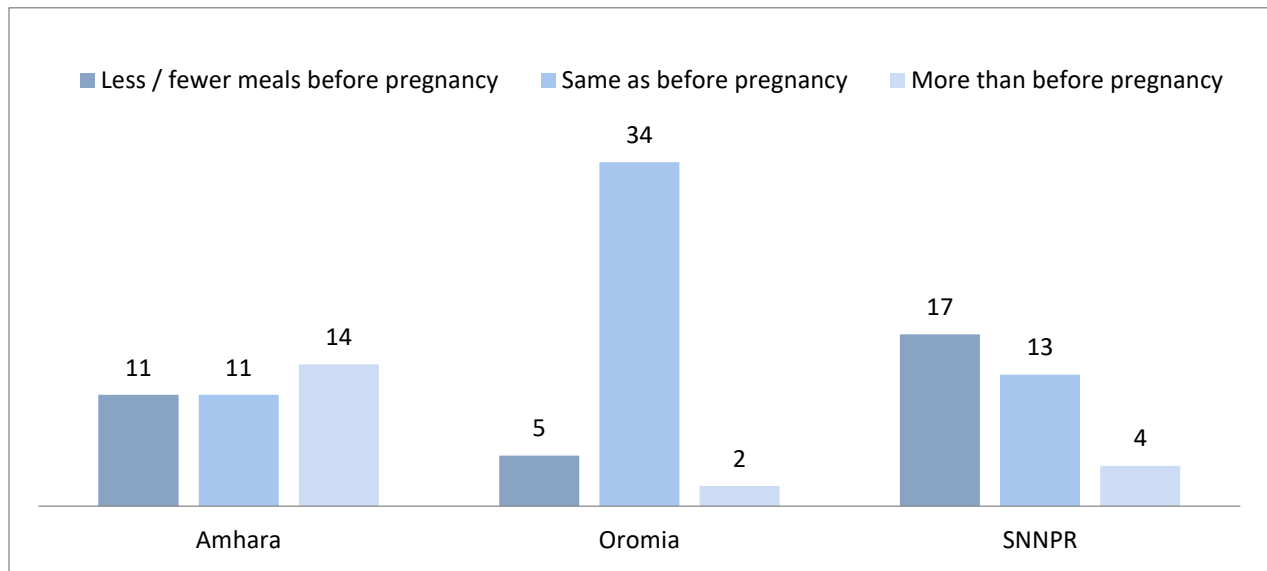


Table 7: Meal Frequency and Meal Amount by Regions Based on the 24-Hour Recall

Variables	The three regions aggregate (n=113)		Amhara region (n=36)		Oromia region (n=41)		SNNPR (n=36)	
	# of women	%	# of women	%	# of women	%	# of women	%
Meal frequency in 24 hours (n=105)								
1 time	2	1.9	0	0	1	2.4	1	3.6
2 times	5	4.8	0	0	4	9.8	1	3.6
3 times	61	58.1	14	38.9	24	58.5	23	82.1
4 times	26	24.8	14	38.9	9	22	3	10.7
5 times	11	10.5	8	22.2	3	7.3	0	0
Missing values	8		0		0		8	
Women who consume								
Less/fewer meals before pregnancy	34	30.4	11	30.6	5	12.2	18	51.4
Same as before pregnancy	58	51.8	11	30.6	34	82.9	13	37.1
More than before pregnancy	20	17.9	14	38.9	2	4.9	4	11.4
Women who								
Eat outside of meal times	31	27.4	21	58.3	6	14.6	4	11.1
Women who								
Are not eating when hungry	42	37.2	16	52.8	5	12.2	18	50.0

As indicated in Table 8 below, there are some differences among the regions, women's physiological status and religion although the small sample size makes interpretation difficult.

Table 8: Meal Frequency by Women's Characteristics from the 24-Hour Recall/ TIPs Visit I

Variables	Consumed 3 or More Meals	
	# (Yes)	%
Region (n=98)		
Amhara (n=36)	36	100
Oromia (n=41)	36	79
SNNPR (n=28)	26	93
Women's physiological status (n=69)		
Pregnant adolescent (n=12)	7	64
Pregnant 1st TM (n=24)	13	56
Pregnant 2nd - 3rd TM (n=28)	20	71
Lactating with infant < 6 months (n=29)	16	55
Lactating with infant 6-12 months (n=22)	13	59
Religion (n=69)		
Orthodox	38	86.4
Muslim	14	45.2
Protestant	17	44.7
Household vulnerability status (n=69)		
VHH	38	60.3
NVHH	31	62.0

Amount of Food in a Meal

The recalls show that about one third of women are eating small amounts of food, among about half of women in Amhara and SNNPR. [Note: the judgment of portion size was from the perspective of the researcher who were alarmed at the small amounts—a few mouthfuls, etc.].

- Pregnant adolescents and potentially women in vulnerable households are those most impacted by small serving sizes at mealtime.

Figure 3: Women who Eat “Extremely Small” Amounts, by Region (%)

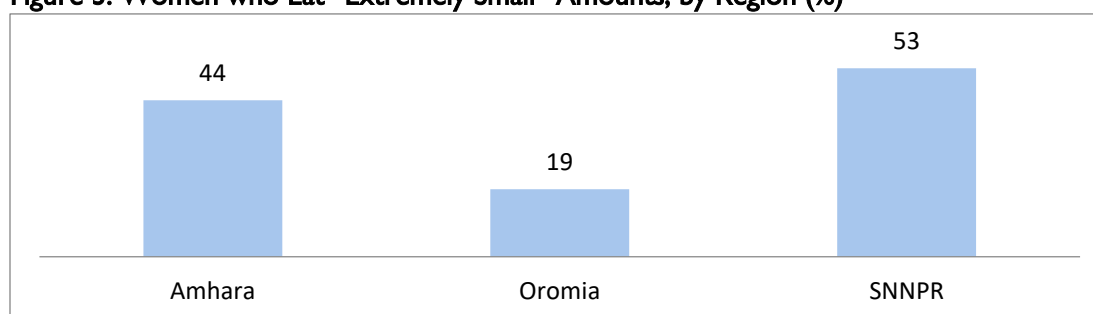


Figure 4: Women who Eat “Extremely Small” Amounts, by Physiological Status (%)

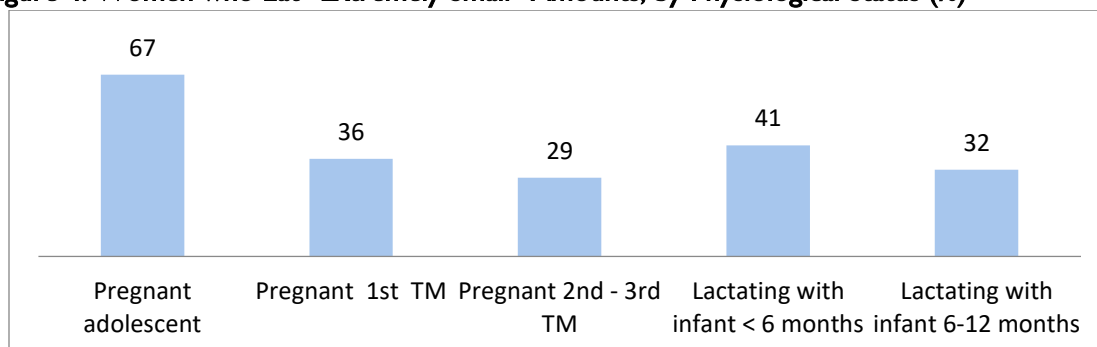


Table 9: Low Food Consumption at Meal Time by Women’s Characteristics Based on The 24-Hour Recall/TIPs Visit I

Variables	Eats Extremely Small Amount of Food	
	Number (Yes)	% of total women in segment
Region (n=43)		
Amhara	16	44
Oromia	8	19
SNNPR	19	53
Women’s Physiological Status		
Pregnant adolescent	8	67
Pregnant 1st TM	8	36
Pregnant 2nd - 3rd TM	8	29
Lactating with infant < 6 months	2	41
Lactating with infant 6-12 months	7	32
Religion		
Orthodox	19	43
Muslim	11	35
Protestant	13	34
Age of Women		
15-19	9	69
20-24	8	21
25-40	26	43
Household Vulnerability Status		
VHH	29	46
NVHH	14	28
Food Security Status		
Food secure wordas	22	37
Food insecure wordas	21	31

The reasons for eating lesser amounts (and a lower frequency of meals) vary from woman to woman. Most of the women believe that the usual three meals (breakfast, lunch and dinner) is enough and they are not aware of the importance of adding extra meals or snacks.

- Some of the women said that they do not have enough food or income to increase their meal frequency or eat snacks.

- Some of the women, especially in the first and the last trimester of pregnancy, said that they have/had poor appetite because they feel nauseous, epigastria pain, not hungry or have a bitter taste in their mouth.
- Because of the scarcity of food in the household, some women mentioned that they prioritize food for their children.
- Some of the women said that little attention is given to them by their husbands regarding what they eat which doesn't motivate them to improve their nutrition.

The women mention few facilitators that could improve meal frequency and amount.

- Some of the women mention they eat sugary foods and sweets in order to avoid bitter taste in their mouth.
- Some of the women mention that they feel less nauseous when the food is prepared by somebody else in the household and hence they increased meal frequency and amount.

Diet Diversity over a 7 day Period

During the first household visit, a seven-day food frequency recall was conducted with all women in order to get a sense of kinds of foods eaten over the course of the last week. This is done to capture food that might not be eaten every day and to modify the impact of the particularities of one day's intake. It is also possible to see the general variety of the diet from a 7-day record. For purposes of the 7-day record the overall findings are reported by food grouping for all women, although food availability will vary by region.

Grains and Tubers: With only a few exceptions, every woman had eaten *injera* (*teff*) during the week and virtually all on a daily or almost daily basis. Sorghum and millet consumption are regionally determined with about all the women in the region where the grain is grown, consuming it daily.

- Over half the women had not consumed noodles (wheat) during the period. For about one-third of the women noodles are eaten several times in a week.
- Almost three-quarters of women report that they had not eaten rice in the period.
- Almost half of the women report not eating Irish potato while the other half eats potato several times a week.
- Four out of five women report not having had sweet potato in the week and for the other women it is eaten only occasionally.

Pulses: One-quarter of the women say they had not eaten pulses while the majority report having had legumes almost every day of the week. (Note: consumption of pulses might again be regionally determined). Soy, a legume, was not eaten by about half the women. One quarter indicated eating soy at least several times during the week.

Nuts and Seeds: None were reported in the 7-day record.

Eggs: Many women, about four in ten did not eat eggs during the period of the record. This number could be slightly higher than normal due to fasting from animal source foods by some of women. One quarter of women ate eggs multiple times during the week-long record.

Dairy: Half of the women did not consume milk during the week, again this could be higher than normal due to fasting from animal source foods. However, only a few women report having milk even a few times a week. Other dairy foods such as yogurt and cheese were rarely consumed. Even considering the effect of fasting, these are not frequently consumed food items.

Meat, Poultry, Fish: Meat consumption was very low. For each type of meat (ground meat, raw meat, chicken, other meat) over half of the women report not consuming it during the week. About a third of the women report consuming a specific type of meat when it is in season, giving the impression that meat is an occasional addition to their diets. When asked specifically about liver, the great majority had not eaten it in the past weeks and only a few indicated that it was a seasonal food. Fish was not included in any of the women's diets.

Nutrient-Rich (Vit A) Fruit and Other Fruit: Almost half the women report that they did not eat a nutrient-rich fruit in the past week. One-quarter had eaten nutrient-rich fruit multiple times in the past week. One in five women had had fruit that is not considered nutrient-rich.

Nutrient-Rich (Vit A) Vegetables, Including Dark Green Leafy Vegetables & Other Vegetables: Over half the women had eaten a nutrient-rich vegetable multiple times during the last week, with one in five reporting virtually daily consumption of nutrient-rich vegetables. One-quarter of women had eaten non-nutrient rich vegetables multiple times in the week.

3. Trials of Improved Practices

Earlier in this section, the final study sample is reported (Table 3) and is followed by a table (Table 4) with an explanation of the circumstances of the women in terms of fasting and celebrating holidays during the first and third visits to their home (when their dietary intakes were assessed). Clearly, these circumstances affect food intake and therefore pose problems for accurately understanding the success of the negotiated trials related to how the women could improve their diets. As noted, there are 24 women in Amhara and SNNP regions whose circumstances affect their inclusion in some of the diet-related TIPS, especially those related to eating animal source foods. Due to the need to exclude these women from some of the trial reports, the total participants per trial vary. There are 89 women whose results will be reported fully. But, even in these cases the numbers of participants in each trial vary since

women were offered different recommendations depending on the analysis of their diet and what they agree to try. Some trials have very low numbers and these will be noted so care can be taken in extrapolating the findings. Where possible, regional differences are noted in the women's responses to the negotiated trial behaviors. Table 10 on the next page is a reminder of those women included fully or partially in the report of the trials.

Table 10: Sample of Those Women Fully (Unshaded) and Partially (Shaded) included in TIPs Analysis

Region		Amhara		Oromia		SNNPR		Total
Woreda		Dembia	W Belesa	ANegele	Bilo Boshe	Melga	Cheha	
# of Kebele		1	1	1	2	1	1	7
Pregnant Adolescence (15-19 any trimester)	VHHs	1	1	2	2	2	0	8
	NVHHs	1	1	0	1	1	0	4
Pregnant (first trimester)	VHHs	0	2	3	3	1	3	12
	NVHHs	3	2	2	1	1	1	10
Pregnant (2-3 trimester)	VHHs	2	2	1	3	4	2	14
	NVHHs	3	1/1	2	2	1	4	14
Nursing Newborn (0-6 months old)	VHHs	2	2	2	3	5	3	17
	NVHHs	2	2	2	3	1	2	12
Nursing (6-12 months old)	VHHs	2	1/1	2	3	2	1	12
	NVHHs	2	2	2	2	0	2	10
Total Respondents		18	18	18	23	18	18	24/89

A. Appraisal of Nutrition Practices, Offer of Recommendations and Outcome of the Trials by Major Participant Segment

At the end of visit 1 with each woman the nutrition and dietary practices of that woman were analyzed and compared with recommended practices for their physiological situation. Based on the critical gaps, the investigator noted which practices on a menu of optimal practices should be discussed with the adolescent/woman and her family during visit 2. At the end of visit 2 the trials were defined with the woman and her family if they were present and, in visit 3, the investigator followed-up with the woman to learn the outcome. Below the trials are reported for each segment by behavior.

Pregnant Adolescents

A total of 12 adolescents received all the three TIPs visits in Amhara, Oromia and SNNP regions. However, only nine were not, either fasting or celebrating a holiday, during either visit 1 or 3.

The analysis of the adolescents' practices and diets after the initial visit regardless of region of vulnerability highlighted numerous nutritional issues:

- Extremely small portions of food consumed at a meal due in part to poor appetite caused by nausea [Note the judgment of quantities was subjective on the part of the researcher. However, they report small quantities in terms of a few mouthfuls—truly small quantities.]
- Low food intake during the course of the day—even if amounts per meal were not extremely small, no extra food over normal was consumed in a meal nor a snack
- No or low intake of animal products (dairy, egg, meat, fish, poultry)
- No or low intake of lentils / pulses
- Complete lack of green, yellow or orange fruits and vegetables
- Heavy or extreme workload
- Never taken, or had stopped taking, IFAS
- Not drinking enough fluids/water
- Not continuing attendance at ANC
- Consuming tea or coffee with meals

Table II lists the recommendations offered to the adolescents and the outcome of the trials. Note that most adolescents tried more than one practice. The table is followed by more description of the trial and the reactions to the new or modified practice.

Table II: Summary of TIPs Recommendations and Outcomes for Adolescent Pregnant Women in All the Three Regions

Recommended practices	# of Women Offered Practice	# of Women Accepted to try Practice	# of Women Succeeded in Using Offered Practice	# of Women Modified Practice
1. Consume animal source food daily (egg, meat, milk)	9	7	4	3
2. Take IFAS daily	6	6	5	1
3. Eat nutrient-rich vegetables & fruit (mango, kale) or other fruit (banana)	6	5	1	0
4. Find household support for heavy tasks	4	4	4	0
5. Add two snacks daily	4	3	2	0
6. Increase water	3	3	3	1
7. Take coffee and tea between meals	2	2	2	0
8. Add linseed/ 'telba'	2	2	2	1
9. Have ANC follow up	2	2	1	0
10. Consume more lentils/chickpea	1	1	0	0

Recommendation I:

Consume an animal source food daily (egg, meat, milk)

Nine adolescents were offered the recommendation to try to eat one animal-source food such as egg, milk, or meat per day. In some cases a variety of animal source foods were mentioned, in others just one food that seemed most suitable for the adolescent such as milk or eggs was

recommended. Seven accepted to try the practice because they had the foods available at home.

- The two adolescents who said they could not even try were in SNPPR and they said they had no eggs or milk and it is difficult for them to buy these foods.

Of the seven adolescents, four were successful in adding either eggs or milk to their diets. Two of these adolescents added an egg every other day instead of once a day. The three adolescents who were not successful were all in Oromia and they said it was not feasible because they had to sell these foods to buy other provisions for the household.

Recommendation 2:

Take IFAS every day

A total of six adolescents received the recommendation to take IFAS every day and were told that they could try to take the tablet before bed or with food if they felt any nausea. (They needed to go to the health facility to get the free IFAS). All six agree to try to take the tablets. Five adolescents succeeded in taking IFAS every day.

- One adolescent in SNPPR modified the practice to take the tablet every other day.
- Adolescents with heartburn reported that they got relief from the heartburn by taking the tablet with food.

The adolescents liked taking IFAS because it is free and available in the health facilities. The adolescents said they did not encounter any deterrence from family members; rather, some of them were encouraged by their husbands.

All adolescents said that they would continue taking daily IFAS in order to improve their overall health status and decrease anaemia.

- One adolescent from West Belesa woreda in Amhara explained that she would encourage other women to take IFAS because: *“My headache is reduced since I started taking IFAS every day”*

Recommendation 3:

Eat nutrient-rich fruits or vegetables - mango, orange, kale, or eat fruit like a banana

Six adolescents received a recommendation to eat nutrient-rich fruits or vegetables or to try to eat a banana. Three were asked to try primarily vegetables and three fruit. (All of the fruit recommendations were given in Oromia). Five adolescents agreed to try to increase their consumption of vegetables or fruit. Only one adolescent was successful. That adolescent, in Oromia, was able to add bananas to her diet. All of the adolescents who were not successful in adding nutrient-rich vegetables or fruit said that they could not afford to buy vegetables from the market.

Recommendation 4:

Find household support for heavy tasks

Four adolescents received a recommendation to seek support for their heavy household tasks. The four adolescents were in Oromia (1) and SNNPR (3). All four adolescents agreed to try to shift some of their tasks. All four were successful in finding someone in the household (husband, other adult) willing to take on a few more tasks such as harvesting firewood and fetching water. These adolescents reported taking more rest during the day.

Recommendation 5:

Add two snacks daily

Four adolescents were asked to add two snacks a day to their diets; one between breakfast and lunch and another between lunch and dinner. Three adolescents agreed to try to add snacks. They lived in Oromia and SNNPR.

- One adolescent in SNNPR said that she could not eat alone; it is not acceptable in her culture so she did not try.

The three adolescents were able to complete the trial and did not encounter any deterrence from family members. The adolescents said the practice was easy because they could eat any kind of food available in their house including bread, *kollo*, and *kocho*.

Recommendation 6:

Increase intake of fluids/water

Three adolescents (in Oromia and SNNPR) were asked to increase their intake of liquids, primarily water. The three agreed and were successful in increasing the amount of water they drank each day. However, the adolescents were given 2 liters as a goal and they mentioned that because of the cold weather they did not feel thirsty and thought that two liters was a lot. Some adolescents said that they did not switch to tea because if they drink tea, the fetus would get fat and that would create problem during delivery.

Recommendation 7:

Shift coffee and tea drinking from meal time to in between meals

Two adolescents, one in Oromia and one in SNNPR were asked if they could alter the time of drinking coffee and tea as a way to improve the absorption of iron from their iron supplement. Both agreed not to drink tea or coffee with their meals and both were able to do this with no problem.

Recommendation 8:

Add linseed/ 'telba'

Two adolescents in Amhara (likely fasting) were asked if they could consume *telba*, linseed/flax seed. Both of the women agreed to try and had success at incorporating *telba* in their diets. One of the women liked eating '*telba*' because she said, it helps in softening the uterus and would latter expedite labor and delivery. Moreover, the two adolescents liked the fact that '*telba*' is available in their homes, although one commented that '*telba*' is too cold.

- One of the adolescents modified the practice by adding sugar in the *telba*'.

Recommendation 9:

Go for follow-up ANC visits

Two adolescents in SNNPR were urged to continue their ANC visits. They both agreed but only one complied with the follow-up.

Recommendation 10:

Eat more lentils or chickpeas

One adolescent in Amhara (likely fasting) was encouraged to increase her consumption of pulses by eating more lentil or chickpea in the form of *shiro*. She agreed to try, and did so for a day or two, but was unable to continue the practice through the trial period.

Pregnant Women (Regardless of Trimester)

A total of 50 pregnant women received three visits, however because of the change that some experienced in their fasting and celebration circumstance, 41 of the women are considered in the trials related to dietary changes tied to eating more animal products. The analysis of the trial did not distinguish between women in their first trimester and those in their second and third trimesters.

The main problems seen in their daily practices that the trials sought to address were:

- Extremely small portions of food consumed at a meal due in part to poor appetite caused by nausea. [Note the judgment of quantities was subjective on the part of the researcher. However, they report small quantities in terms of a few mouthfuls—truly small quantities.]
- Low food intake during the course of the day—even if amounts per meal were not extremely small, no extra food was consumed over the normal amount in a meal, nor an extra meal or snack
- No or poor intake of animal products (dairy, egg, meat, fish, poultry)
- Not consuming vegetables
- Never taken IFAS/ stopped taking IFAS
- Consuming tea or coffee with meals
- Not consuming enough water/fluids per day
- Not gone / not continuing to go to ANC
- Not eating nuts or seeds
- Heavy workload

Table 12 lists the recommendations offered to the pregnant women and the outcome of the trials. Note that most women tried more than one practice.

After the table more description of the trial and the reactions to the new or modified practice is provided.

Table 12: Summary of TIPs Recommendations and Outcomes for Pregnant Women in All the Three Regions

Recommended practices	# of Women Offered Practice	# of Women Accepted to try Practice	# of Women Succeeded in Using Offered Practice	# of Women Modified Practice
1. Eat nutrient-rich vegetables & fruit (mango, kale) or other fruit (banana)	29	16	7	1
2. Stop/reduce coffee and tea at mealtime—take between meals	29	23	22	2
3. Increase fluids/water	26	26	18	1
4. Add at least one snack daily	25	25	17	0
5. Consume animal source food daily (egg, meat, milk)	25	25	10	2
6. Take IFAS daily	23	22	15	2
7. Find household support for heavy tasks	13	11	7	0
8. Consume more shiro--lentils/chickpea	6	4	4	0
9. Eat an additional meal daily	5	3	0	3
10. Add linseed/ 'telba'	4	4	3	0
11. Have ANC follow up	4	3	0	0
12. Add more food to regular food at a meal	2	2	2	0

Recommendation 1:

Eat nutrient-rich vegetables and fruit or other fruit (banana)

Twenty-nine women were advised to incorporate either a nutrient-rich vegetable such as kale into their diet, and / or to add fruit. About half of those asked to try these practices agreed to even try and of those who tried fewer than half were successful. While in all cases the specific fruit or vegetable is not known many women mentioned having added banana to their diet.

Recommendation 2:

Stop or reduce coffee or tea at meal time and switch to drinking tea or coffee in between meals

A total of 29 women were advised not to drink coffee or tea with their meals and instead shift coffee / tea drinking to a time between meals (Most of these women were in SNNPR). Twenty-three women agree to try the practice and 22 women were successful in switching their tea and coffee drinking to between meals. The women liked the fact that this practice was easy and didn't require extra money and resources.

- For most of those who would not try it was because they were drinking coffee and tea to keep their mouths moist in order to help them eat solid foods. Women also felt that the coffee would irritate their stomach if they did not take it with food.
- A few women modified the practice so that if they did take food with their coffee if they were with neighbors but still switched when at home. [It is a custom for neighborhood

women to come together every day and drink coffee, moving around the houses few times during the day. Coffee is served with available foods like roasted cereals and pulses--*Kocho*, *chapattis* and breads.]

Recommendation 3:

Increase fluid/water consumption

Twenty-six pregnant women received the recommendation to try to drink more fluids, specifically water. In some cases a specific amount of water was recommended, like an additional liter, while in other cases the woman was asked just to consume more water. All women agreed to try, and 18 were successful, however only ten succeeded in taking the agreed upon extra liter per day.

- Those who were unsuccessful, almost unanimously in Oromia, found it difficult to drink so much water when they did not feel thirsty.
- There was also a perception that water is not an important nutrient for the body and offers no benefit if not in the form of tea, soup or a soft drink.

Recommendation 4:

Add at least one snack daily

The outcome of this trial was analyzed only for those women who were not fasting during the trial period. A total of 25 pregnant women were advised to add at least one snack per day to their diets. All of them accepted to try the practice. Seventeen of the women could add a snack to their daily routine. In SNNPR there was widespread acceptance of this addition.

- The main foods women used were *kocho* and *gomen* in the SNNPR. Potato, roasted cereals, bread, *injera* and other food items available at home were the snacks in other woredas.
- The women liked having a snack as it relieved their hunger and they felt strong. The women did not face deterrence from the family members as they have convinced their husbands that it is good to consume snacks in between meals to improve their own and their fetus's health.
- Several of women in Oromia who were unsuccessful had been asked to add 2 snacks and they were not successful in adding two.

Recommendation 5:

Consume at least one animal source food per day – E.g. eggs

Thirty-one pregnant women (primarily in Oromia and SNNP) were asked if they could include one animal source food in their diet each day. Most frequently, an egg was recommended, but adding milk or meat was also mentioned to the women. While 25 women told the investigators they would try to make this addition, only 10 were successful in adding an animal source food every day. Most of those women who were successful added an egg. For those women who had a chicken that produced eggs, they liked the fact that eggs were easily available in the

house. Some of the women said that they liked adding the egg because it was easy to cook compared to *wat* that takes long time to make.

- Two women modified the practice by using an animal source food 2-3 days per week due to the expense of buying the food for daily consumption.
- Women who were not successful said it was hard to do this every day because the foods were not in the home and were expensive for them to buy from the market.

Recommendation 6:

Start/continue taking IFAS everyday

A total of 23 pregnant women who either had never taken or had stopped taking IFAS were asked to take IFAS on a daily basis. (They had to go to the health facility to get free IFAS). Seventeen women tried the practice and 15 succeeded in taking IFAS on daily basis.

- One of the women modified the practice to take it every other day.
- Two women stopped taking the IFAS because of epigastric pain.
- At least two of the women who did not try did not want to go to the facility for IFAS.

Recommendation 7:

Find household support for heavy tasks

Thirteen pregnant women were asked to seek help with heavy task to avoid them and/or afford them more time to rest. Eleven women agreed to try the recommendation and seek help among household members. Of those who tried, seven reported success.

Recommendation 8:

Consume more shiro--lentils/chickpea

Six women were asked to increase their legume consumption, often by eating more *shiro*. Four of the women agreed to try it and all 4 were successful in eating more legumes in their meals.

Recommendation 9:

Eat an additional meal every day

This recommendation was given only in Oromia to five pregnant women. Three women tried the recommendation, but no one was able to implement it on a daily basis. It seems those that modified the practice changed from eating a meal to eating a snack.

Recommendation 10:

Add linseed/ 'telba'

Four women were asked if they could try to add *telba* to their diets. All four agreed to try and 3 of them were able to add *telba*.

Recommendation 11:

Have ANC follow-up

Four pregnant women who were not going as recommended to the health center for their ANC visits were urged to attend. Three said they would try to go, but not one of the three followed recommendation.

Recommendation 12:

Add more food to regular food at a meal

In Amhara two women were asked to take more food at meal time. They were asked to try to eat more *injera* or to take a large spoonful more of food. Both were successful in this new practice.

Lactating Women

A total of 51 lactating women within a year of giving birth completed all three household visits. Due to inconsistencies in the circumstances, six of these women were not included in some of the food related trials.

The main nutrition and dietary problems facing lactating women were as follows:

- Low food intake during the course of the day—no snacks and several not eating three meals/day. [Note the judgment of quantities was subjective on the part of the researcher. However, they report small quantities in terms of a few mouthfuls—truly small quantities.]
- Eating extremely small amount of food at meal time
- No or poor intake of animal products (dairy, egg, meat, fish, poultry)
- Consuming sugary biscuits in place of nutrient-rich foods
- Heavy or extreme workload
- Not taking enough rest
- Consuming tea or coffee with meals
- Fasting
- Not taking or stopped taking IFAS
- Not consuming enough water/fluids per day
- Not eating a “fat source” cereal like *telba*
- Not consuming nutrient-dense fruits
- Not consuming nutrient-dense vegetables like spinach

Table 13 lists the recommendations offered to post-partum lactating women and the outcome of the trials. Note that most women tried more than one practice. The table is followed by more description of the trial and the reactions to the new or modified practice.

Table 13: Summary of TIPs Recommendations and Outcomes for Lactating Women in All the Three Regions

Recommended practices	# of Women Offered Practice	# of Women Accepted to try Practice	# of Women Succeeded in Using Offered Practice	# of Women Modified Practice
1. Add at least one snack daily	22	17	15	2
2. Stop/reduce coffee and tea at mealtime—take between meals	21	17	17	0
3. Take IFAS daily	19	16	16	0
4. Find household support for heavy tasks	19	18	16	0
5. Increase fluids/water	18	18	16	2
6. Eat nutrient-rich fruit (mango, pimento) or other fruit (banana)	16	12	6	3
7. Consume animal source food daily (egg, meat, milk)	16	8	2	5
8. Eat nutrient-rich vegetables (carrot, kale, collard greens)	5	3	2	0
9. Add linseed/ 'telba' to diet	4	4	2	0
10. Consume more shiro--lentils/chickpea	3	1	0	0
11. Go to health facility for family planning advice	1	1	0	0
12. Stop chewing Khat	1	1	1	0

Recommendation 1:

Eat at least one snack daily

A total of 22 lactating women were asked to try to add at least one snack (a small serving of food between meals). In Oromia they were asked to try to add two snacks each day. Seventeen agreed to try to eat a snack. Fifteen women were able to eat at least one snack each day. Those who were successful said that it was a relief to be able to satisfy their hunger and they felt healthier. Women in Amhara and SNNP had more success implementing the practice than those in Oromia.

- Those who declined to try or who were unsuccessful with the practice said they did not have enough food in the home for a snack or that it was too expensive to purchase foods. A few women said they were not comfortable eating alone without other family members.
- In Amhara the recommendation was made for the women to try to use non-sugary foods for snacks.

Recommendation 2:

Stop/reduce coffee and tea at mealtime—take between meals

This recommendation was offered to 21 women, the majority in SNNPR. Seventeen women agreed to try it and all of them were successful in shifting their coffee drinking away from mealtime to in-between meals.

Recommendation 3:

Take IFAS

A total of 19 women were advised to take daily IFAS. (They had to go to the health facility to obtain their free IFAS). Sixteen women tried the practice and all of them succeeded in taking IFAS daily. Most of these women were in SNNPR. No lactating woman in Amhara was asked to take IFAS. A few women who took the IFAS complained of epigastric pain but continued the tablets.

- Two of the women who did not try to take the IFAS did not want to go to the health facility to get the IFAS.

Recommendation 4:

Minimizing workload and working time

A total of 19 lactating women were asked if they could find someone in the household to support them with their heavy task, to minimize workload and working time. Eighteen of the women tried the practice and succeeded. The majority of the women receiving this recommendation and succeeding in the trial were in SNNPR. Some women noted an increase in their breast milk production when they could rest more. Others liked this practice because they felt it was good for their own health.

Recommendation 5:

Increase fluids/water intake daily

Eighteen lactating women were asked to increase their fluid intake primarily by drinking more water—an additional liter per day. All 18 tried the practice and 16 were able to increase their fluid intake significantly. The majority of these women were in Oromia.

- Three lactating women modified the practice: all were in Amhara where the recommendation was to drink an additional 2 liters of water per day. These women opted to drink less.

Recommendation 6:

Eat fruit daily (mango, papaya and banana)

A total of 16 lactating women were advised to eat one or more servings of fruit per day such mango, banana, papaya, orange or pimento. Twelve women tried to follow this advice. Six women were successful and three modified the practice, not being able to eat fruit daily. Banana seemed to be the fruit of choice.

- For those women who did not try, as well as those who did, there were complaints that this practice is not affordable. Women reported that their husbands also complained about the cost of purchasing fruit.

Recommendation 7:

Consume animal source food daily (egg, meat, milk)

The numbers of lactating women reported here are only those in Oromia and SNNPR where women were not fasting. Sixteen women were asked to add an animal source food to their daily diets. Half, or eight, agreed to try. Of those seven women added animal source foods, but just two could do so daily. The others did so either every other day or several times a week. The most common animal source food to be added was egg.

Recommendation 8:

Eat nutrient-rich vegetables daily (carrot, kale, collard greens)

Five lactating women were advised to add vegetables to their diet on a daily basis. All of these women were in SNNPR and Amhara (the advice was not provided in Oromia). Three women agreed to try and two were successful in eating vegetables every day.

Recommendation 9:

Add linseed/ 'telba' to diet

Four lactating women in Amhara were asked to try to incorporate linseed / *telba* in their diets. They all tried and 2 were successful in adding *telba*.

Recommendation 10:

Consume more shiro--lentils/chickpea

Three women were asked to increase the amount of legumes in their diet primarily by eating more *shiro*. One woman agreed to try but failed to eat more *shiro*.

Recommendation 11:

Go to health facility for family planning advice

One woman in SNNPR was given the advice to go to the health facility for a consultation on family planning methods. She agreed to go, but did not follow through during the period of the trial.

Recommendation 12:

Stop chewing khat

One lactating woman in Amhara was asked to stop her practice of chewing *khat*. She agreed and was successful in stopping for the trial period.

Summary of All Trials

Table 14 lists the recommendations offered to pregnant adolescents and pregnant and post-partum lactating women, and the outcome of the trials. (Note that most participants tried more than one practice.) A review of recommendations that were offered to a substantial number of the participants offers a more comprehensive view of outcomes. The recommendations are summarized across the sample for each one offered to at least 10 participants.

Table 14: Summary of TIPs Recommendations and Outcomes for All Adolescents and Women in All the Three Regions

Recommended Practices	# of Women Offered Practice	# of Women Accepted to Try Practice	# of Women Succeeded in Using Offered Practice	# of Women Modified Practice	% of Women Using Improved Practice (succeeded + modified)
1. Eat nutrient-rich vegetables or fruit or other fruit (banana)	56	36	16	4	36
2. Stop/reduce coffee and tea at mealtime—take between meals	52	42	40	2	81
3. Add at least one snack daily	51	45	34	2	71
4. Consume animal source food daily (egg, meat, milk)	50	40	16	10	52
5. Take IFAS daily	48	45	36	3	81
6. Increase fluids/water	47	47	37	2	83
7. Find household support for heavy tasks	36	33	27	0	75
8. Add linseed/ 'telba' to diet	10	10	7	0	70
9. Consume more shiro--lentils/chickpea	10	6	5	0	50
10. Go for ANC or ANC follow-up	6	5	1	0	--
11. Add an additional meal daily	5	3	0	3	--
12. Add more food at meal time	2	2	2	0	--
13. Go to health facility for family planning advice	1	1	0	0	--
14. Stop chewing Khat	1	1	1	0	--

Recommendation 1:

Eat nutrient-rich vegetables or fruit or other fruit (banana)

This recommendation was offered to the most participants because many women's diets were extremely poor in fruits and vegetable. Overall, about one-third of the participants were able to increase their vegetable consumption and few their fruit intake. Fruit with the exception of banana was not successful due to cost. Nutrient-dense vegetables especially those that were dark green leafy ones (kale) were the most commonly used. Lactating women were more likely to increase their intake of fruits and vegetables than other women and adolescents were the least likely.

Recommendation 2:

Stop/reduce coffee and tea at mealtime—take between meals

This recommendation was offered to about half of the pregnant and lactating women and only a few adolescents. The women readily accepted it when they were at home. They felt that it was difficult to follow when they were with neighbors for coffee. There appeared to be some confusion about avoiding **any** mixing of coffee and tea with eating or if it is simply avoiding these beverages with a meal.

Recommendation 3:

Add at least one snack daily

This suggestion, more than adding food at each meal or trying to add an extra meal was accepted. It was more successful with women than with adolescents (possibly because adolescents were asked to add two snacks per day). Almost uniformly, women could add only one snack a day even when asked to add two.

- In SNNPR acceptance of this addition was higher than in other regions.
- The main foods that were used for snacks were ‘*kocho*’ and ‘*gomen*’ in the SNNPR. Potato, roasted cereals, bread, *injera* and other food items available at home in other woreda.
- The women liked having a snack as it relieved their hunger and they felt strong. The women did not face deterrence from the family members as they have convinced their husbands that it is good to consume snacks in between meals to improve their own and their fetus’s/baby’s health.

Recommendation 4:

Consume animal-source food daily (egg, meat, milk)

The ability to improve adolescents’ and women’s intake of animal source foods was “assessed” only in a sub-sample of the women. Among those who were not fasting, half of the women were able to add an animal source food, many daily, although there was a high frequency of modified practices where these foods were added slightly less frequently. Adding these foods was particularly high for adolescents. The most common animal-source food added was egg and primarily when the family owned chickens and could spare eggs for consumption.

Recommendation 5:

Take IFAS daily

This recommendation was offered to just under half of the adolescents and women: those not taking IFAS currently. Beginning to take the supplement or re-starting it was well accepted even though it meant a trip to the health facility to get the tablets. All adolescents complied with taking IFAS. Although there were a few complaints about gastric pain, few women were deterred from continuing for the duration of the trial. Generally, women noted a difference in their energy level.

Recommendation 6:

Increase fluids/water intake

This recommendation was offered to just under half of the adolescents and women. It was well accepted, primarily among lactating women. Some women were asked to drink two liters of water. This proved too much for most of them, but a liter of water was acceptable. Many women said that it was winter and they were not thirsty and therefore could not drink as much as they do other times of year.

Recommendation 7:

Find household support for heavy tasks

This recommendation was made to about one-third of the adolescents and women. Three-quarters were able to find household members willing to share heavy tasks with them so they could rest more, or at least not have to do the heavy work. The adolescents and the lactating women had more success than the pregnant women in getting help with tasks. This trial was most successful for the women in SNNPR.

Recommendations 8 & 9:

Add linseed/ telba to diet and

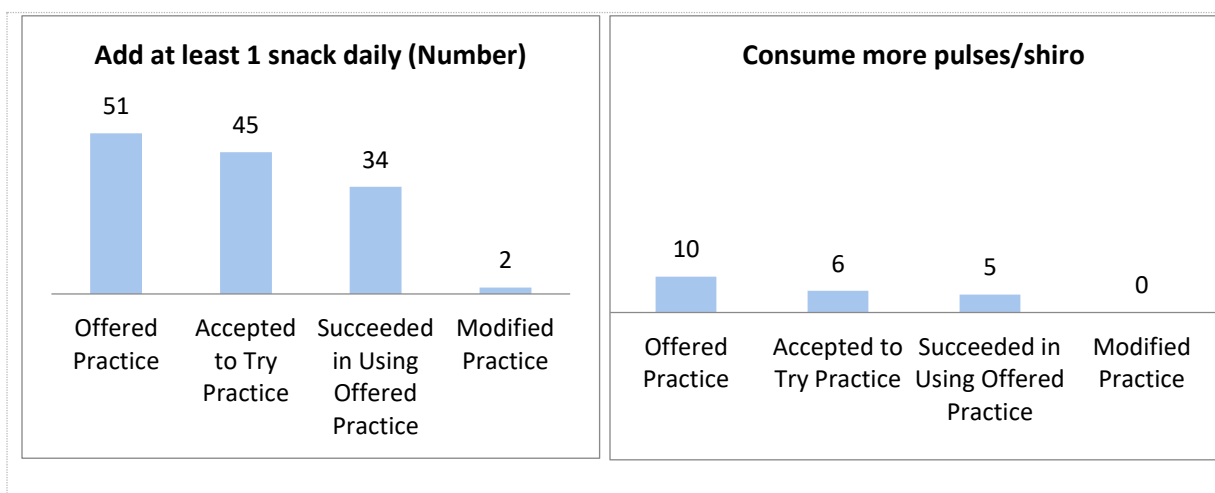
Consume more shiro--lentils/chickpea

Each of these recommendations was tried with only a small number of participants. Adding *telba* (a seed) to the diet proved more acceptable than adding more pulses; even eating more *shiro*, a common diet staple. *Telba* seemed more acceptable among pregnant women and adolescents than lactating women, but the sample is small.

Summary of Trials: Aligning Behaviors to Dietary Challenges

Improve Dietary Intake (boosting quantity). Recommendations offered to women included adding at least one snack daily, consuming more pulses / *shiro* and to lactating women, adding a meal. Adding at least one snack a day was accepted and practiced by many women, especially adolescents and lactating women. Adding more food to meals, such as pulses / '*shiro*' was offered to too few women to draw a conclusion, but when offered, acceptance was mild, with uptake mostly among pregnant women. Adding a meal was offered to only five mothers (too few to draw conclusions), three tried it and none could do it on a sustained basis.

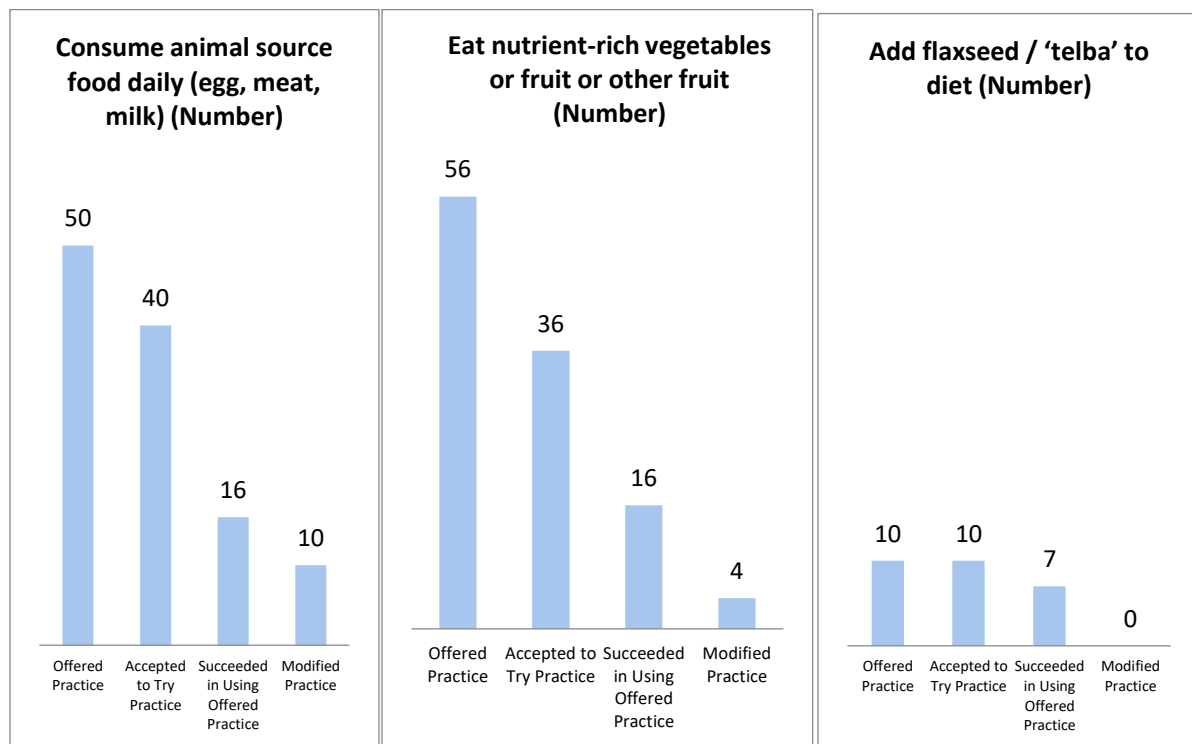
Figure 5: Summary of Results of Trials to Improve Dietary Intake



- 88% of participants who accepted to try (45) succeeded in **adding a snack** each day to their diets (36).
- 80% of participants who accepted to try (6) succeeded in **adding pulses/ *shiro*** to their diet (5).

Improve Dietary Diversity. Recommendations included eating nutrient-rich vegetables or fruit /other fruit each day, adding animal source food (egg, meat, milk) daily, and adding *telba* (flaxseed) to the diet. Adding nutrient-rich fruit and vegetables was the most frequently offered and well accepted way to increase diversity, particularly successful with adolescents and lactating women. More than half of the women offered the practice of adding animal source food to meals were able to do so, primarily eggs, at least several times a week. Few participants were asked to add *telba* (flaxseed) to their diets, but for those offered, it was well accepted and practiced successfully with uptake highest among adolescents and pregnant women.

Figure 6: Summary of Results of Trials to Improve Dietary Intake

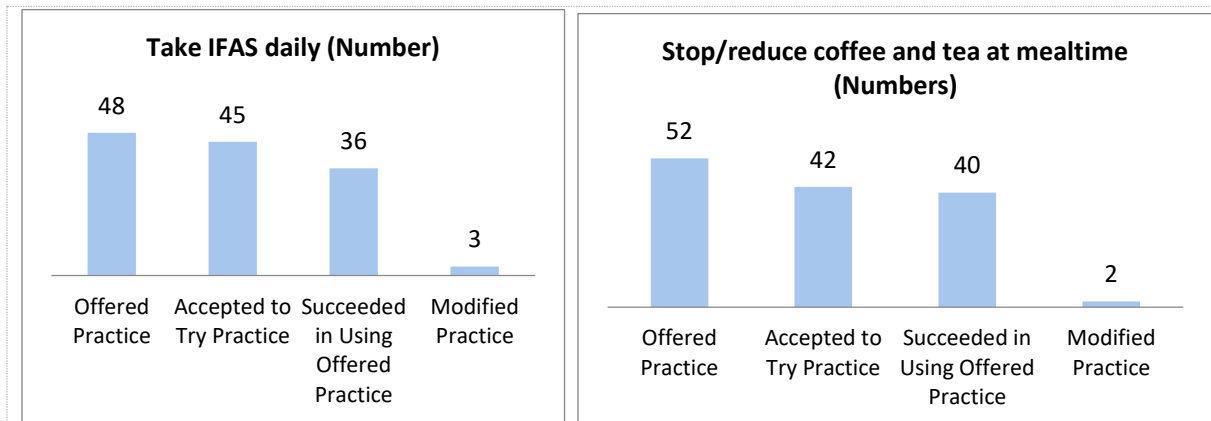


- 55% of participants who accepted to try (36) succeeded in **eating nutrient-rich vegetables or fruit /other fruit** (20).
- 65% of participants who accepted to try (40) succeeded in **eating animal source foods** daily such as eggs (26)
- 70% of participants who accepted to try (10) succeeded in **adding *telba*** (flax seed) to their diet (7)

Improve Iron Intake. Recommendations included taking IFAS daily and stopping or reducing coffee and tea with meals. For women offered the recommendation to take IFAS daily, acceptance was high, and adherence was good. These women obtained IFAS from a health facility. Many women were offered

the recommendation of stopping or reducing coffee and tea with meals. This was well accepted with good follow-through. It was important to clearly communicate that this practice is for meals at home, and is not related to snacks with coffee ceremonies.

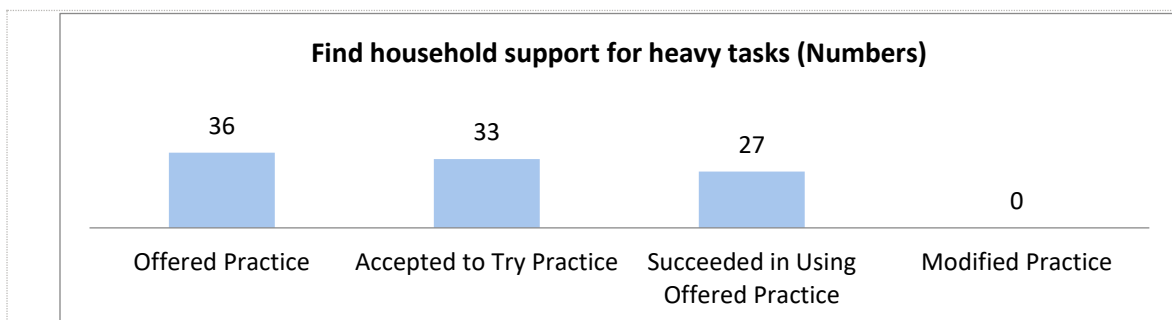
Figure 7: Summary of Results of Trials to Improve Iron Intake



- 87% of participants who accepted to try (45) succeeded in **taking IFAS daily** (39).
- 100% of participants who accepted to try (42) succeeded in stopping or reducing drinking coffee and tea with meals (42).

Reduce Energy Expenditure. The recommendations included getting help with heavy tasks; women and their families themselves determined what tasks. Adolescents and lactating women, more than pregnant women, were able to get help with heavy tasks. Most of the help came from oldest children or mothers and mothers-in-law, especially for adolescents.

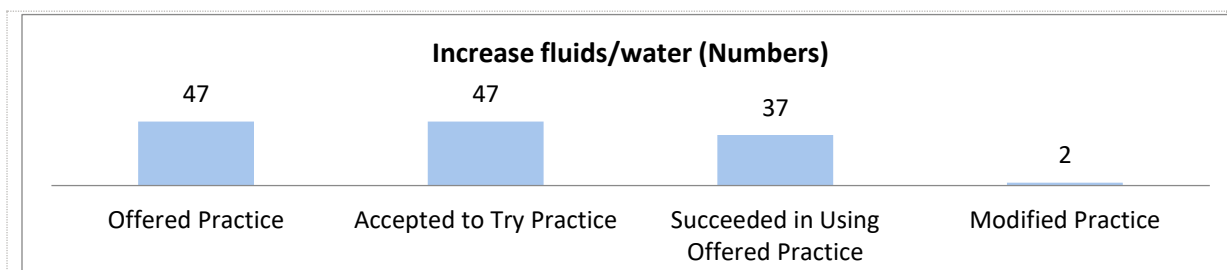
Figure 8: Summary of Results of Trials to Reduce Energy Expenditure



- 82% of participants who accepted to try (33) succeeded in **getting help for heavy tasks** (27).

Increase Fluid Intake. The recommendation to increase the intake of water or other fluids included suggestions of drinking more water; this was often coupled with reducing soft drinks or sodas. This was well accepted because there was a perception by the women that they were not drinking enough fluid, especially lactating women.

Figure 9: Summary of Results of Trials to Improve Dietary Intake



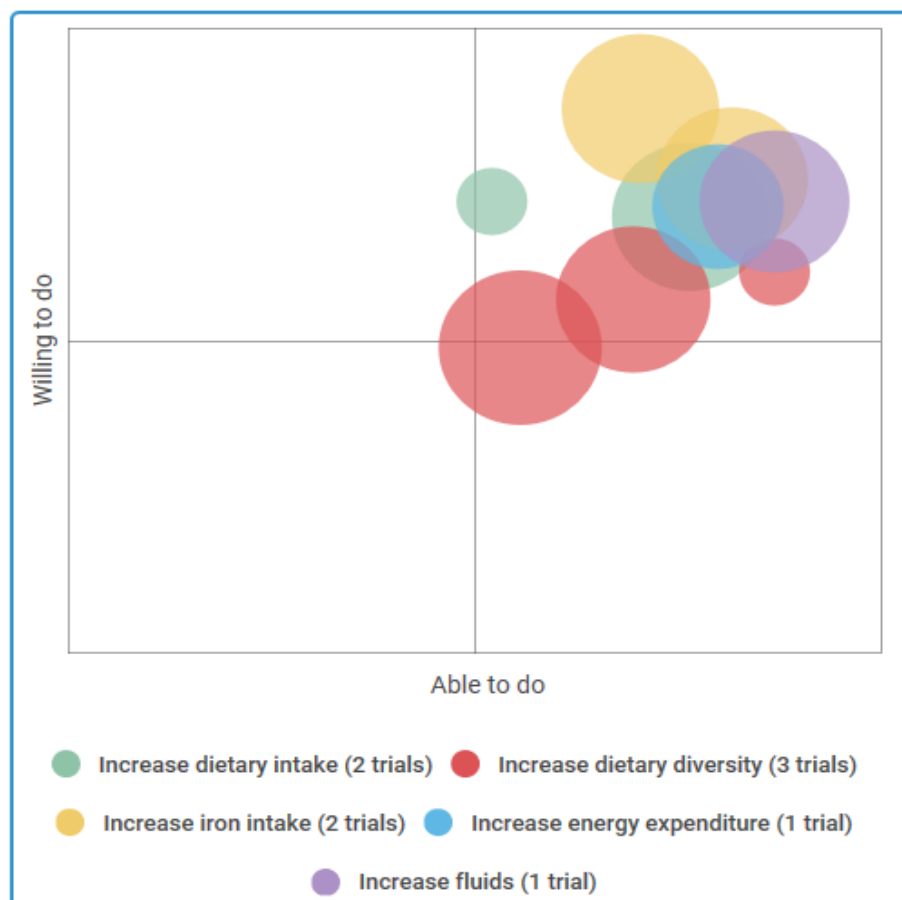
- 83% of participants who accepted to try (47) succeeded in **drinking more fluids, i.e., water** (39)

Use of ANC and PNC. Although this trial had very small numbers, it is worth noting that seven women were asked to go either for the first time or for follow-up appointments. Of these seven women, six agreed, but only one followed through, an adolescent.

Summary Outcomes of All Trials

This visual depiction of the results of the trials shows that most women who were offered a practice selected based on an assessment of their needs were willing and were able to make the change.

Figure 10: Participants' Willingness and Ability to Integrate Specific Practices



B. Overview of Comparison of Initial and Final Dietary Assessments

Part of the analysis of the trials is a comparison of the participants' dietary intake pre and post-trial. Due to problems in recording the 24-hour dietary recalls, a nutrient analysis was not possible, but a food group analysis was done. As mentioned before, the changes in the participants' circumstances due to fasting and celebrations in many cases made even a food group analysis difficult. Therefore, this pre- post- comparison of food groups was restricted to records from Oromia's woredas and Malga woreda in SNNPR where fasting and celebrations were not taking place during the study period. This serves as an illustration of what might be expected through the introduction of these recommendations in a program.

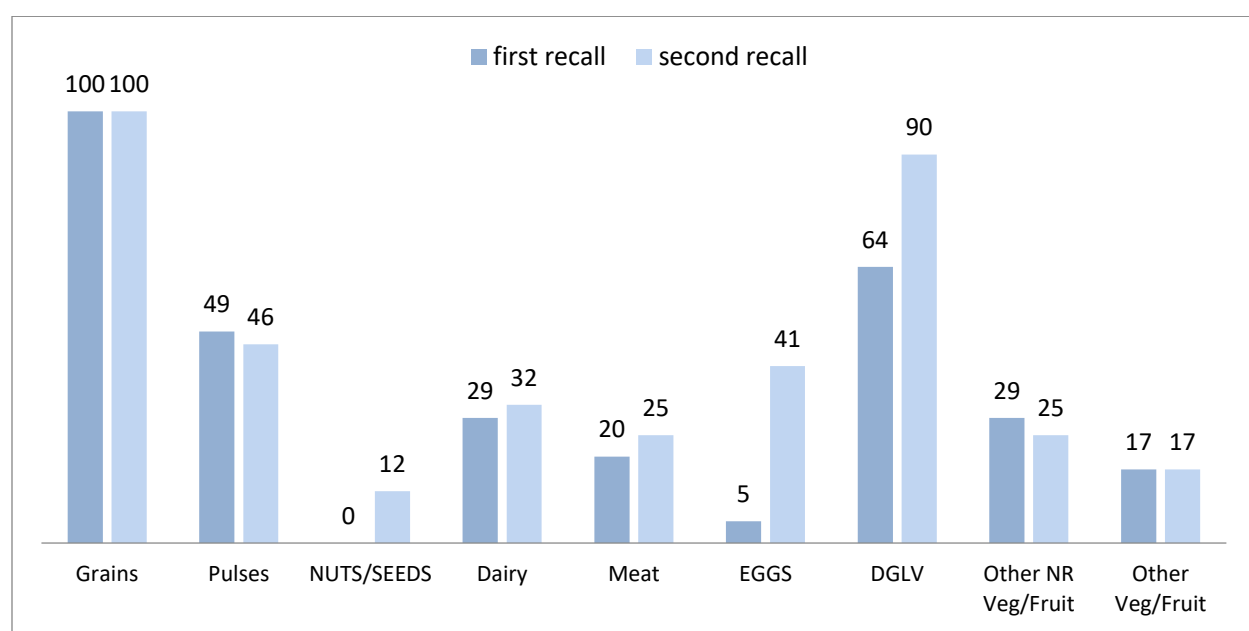
Table 15 illustrates the differences in the consumption of foods from different food groups before and after the trials. The period of time between the recalls was about seven days. In summary:

- Overall the diets remain quite poor in their diversity. The only foods that were eaten by more than half the participants pre-trial were grain/tuber; vitamin A-rich vegetables and other vegetables. This poor diversity continues with “other vegetables” falling below 50% but consumption of dark green leafy vegetables increased in almost all women's diets. Other vitaminA-rich fruits and vegetables increased slightly with about one-third of the women consuming fruits and vegetables in this group.
- The intake of pulses stayed about the same at just under half of the women consuming these nutrient-rich foods in a 24-hour period. This is reflective of the trials where few women were asked to increase their intake and when asked, few followed through.
- The inclusion of dairy products (primarily milk) or meat increased slightly with about one-third of women consuming dairy and one-quarter a flesh food post-trial.
- The change in egg consumption was significant and reflects the outcomes of the trials. The number of women who consumed egg during the first TIPs visit has doubled during the third TIPs visit. Egg was present in few of the pre-trial recalls while it reached 40% post-trial. Adding egg was especially popular in Oromia.
- Fruit was found in very few recalls pre or post-trial.

Table 15: Analysis of 24 Hour's Food Recall in the Oromia Region and Malaga Woreda, SNNPR (n=59)

Food Groups	TIPs visit #1		TIPs visit #3	
	adolescents and women who consumed specific food groups in prior 24 hours		adolescents and women who consumed specific food groups in prior 24 hours	
	#	%	#	%
Grains—rice, <i>teff</i> , tubers, plantains	59	100	59	100
Pulses (beans, peas, lentils)	29	49	27	46
Nuts and seeds	2	3	7	12
Dairy (milk, yogurt, cheese)	17	29	19	32
Meat, poultry, fish, insects	12	20	15	25
Eggs	3	5	24	41
Dark green leafy vegetables	38	64	53	90
Other vitamin A-rich (beta-carotene-rich) fruits and vegetables	19	32	21	36
Other vegetables	32	54	11	19
Other fruits	5	8	1	2

Figure 11: Dietary Diversity by Food Groups Consumed in the past 24 hours (%)



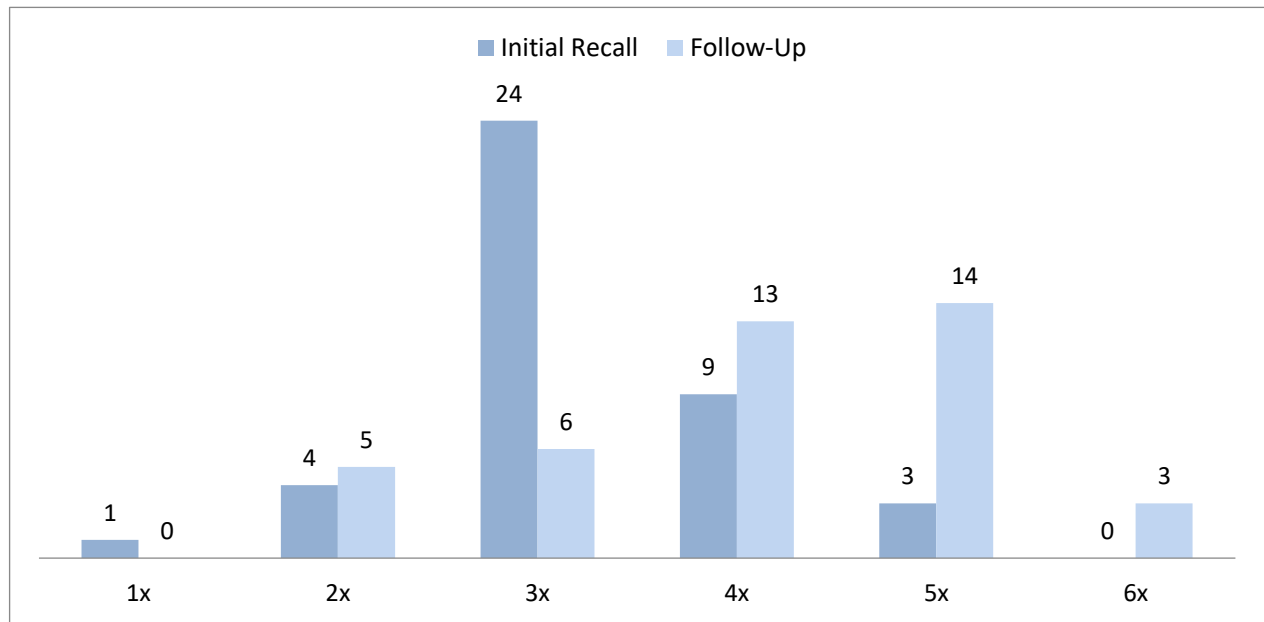
With no ability to analyze the 24-hour recalls for nutrient intake due in part to the difficult the investigators had in estimating food quantities, the other indicator that was examined pre and post-trial is the number of times the participants were eating in the previous 24-hour period. This could be examined only in Oromia. Many of the trials asked women to add snacks during their day. Although the shift was not large, pre-trial about two-thirds of the women in Oromia

were eating more than three times/day and following the trials three-quarters of the women ate more than three times/day. There was therefore a small reduction in the number of women eating three or fewer times in a day.

Table 16: Analysis of Number Times a Meal or Snack was Consumed in Prior 24 Hours from the Food Recalls in the Oromia Region (n=41)

# of meals/snacks consumed in prior 24 hours	# of adolescents & women (TIPs visit #1)	# of adolescents & women (TIPs visit #3)
2	6	5
3	9	6
4	13	13
5	8	14
6	5	3

Figure 12: Frequency of Eating in the Past 24 Hrs (Oromia, N=41)



DISCUSSION

I. Limitations of the Study

This investigation was designed to be an in-depth exploration of adolescents' and women's perceptions of their current nutrition-related behaviors during their pregnancy and post-partum period and what they could and could not do to improve their practices and why. The sample was carefully recruited to represent women of different religions and socio-economic circumstances to allow program planners to better understand constraints and abilities among the diversity of family circumstances in the Growth through Nutrition program area. However, in the implementation of the field work and the analysis of the transcripts there were shortcomings that compromised the robustness of the findings, providing a more quantitative than qualitative understanding of what transpired and about practices. Transcripts and reporting following analysis show a lack of probing and exploration. We also found, in some cases, poor quality / incomplete notes, due in part to insufficient supervision. The field supervisors had two jobs, they had to work as both an investigator and supervisor, which meant that they did not have enough time to review the investigators' notes. These problems resulted in limited information about why the women were willing, or not, to change and very scant information about the household dynamics impacting the changes. In addition the analysis was not detailed. It did not explore the different participant segments to understand differences and similarities between, for example, women from vulnerable and non-vulnerable families, those in early pregnancy compared to later pregnancy; those in early months post-partum from those later in their post-partum period. The lack of thorough analysis has limited the conclusions that can be drawn from the study.

Another important constraint in interpreting the outcome of the trials is the lack of sound 24-hour dietary food recall information. This information and its analysis allows for a quantitative measure of dietary improvement and a way to determine if the uptake of a new behavior improved dietary intake or if it supplanted another practice equally valuable.

In addition, as referred to in the findings section, the time-period of the TIPs in some woreda overlapped fasting and non-fasting days. The lack of women who were fasting for the duration of the study period limited our ability to complete one of the research objectives to understand what dietary improvements might be possible during a fasting period. Instead, the change in circumstances meant that a few women could not be counted in some of the dietary trials.

2. Consistency of the Findings with Other Studies & Insights from TIPs Related Specifically to Diet

The findings from this TIPs investigation related to documenting the current diet of women are consistent with other reports in recent years on maternal nutrition practices. We bring in other studies here to make more robust the TIPs findings and to offer a few additional insights about the TIPs results because this was the first to “test” what adolescents and women could do to improve their diets during pregnancy and lactation. The work reviewed includes the 2014, USAID/ENGINE qualitative research and the quantitative research on maternal nutrition

in the Amhara, Oromia, qualitative maternal nutrition research in Amhara, Oromia, Tigray and SNNP regions and findings from the 2014 ENGINE pregnancy cohort quantitative study. Other studies are mentioned by name.

- Pregnant and lactating women generally eat at the same time and from the same food cooked for the entire family with no special considerations given to their increased needs. The women believe that sharing the same meal affirmed family unity and cohesion. Men and women perceive the practice of preparing food just for oneself and eating alone as culturally inappropriate for women.
 - ⇒ The trials pointed to the difficulty women have to eat an additional **meal** outside of family meal times.
- While the number of times a day a pregnant or lactating woman eats varies, the majority are eating 3 times a day (morning, mid-day and evening). What varies is whether or not women are snacking. Adding a snack proved acceptable and feasible and seems to be already well accepted in some areas. The other studies confirm this.
 - ⇒ In the TIPs inquiry the highest meal frequency was seen in Amhara where despite the fasting season most of the pregnant and lactating women do not skip meals. This is supported by other studies looking at meal and snacking: a study in Gondar woreda in Amhara found that 74% of the pregnant women consumed a snack in addition to their main three meals (Alemayehu and Tesema 2014); a study in Wondo Genet woreda of SNNPR showed 25% of pregnant women were eating more than three times a day (Desalegn, Pragma et al. 2015); another study conducted in Guto Gida woreda of Oromia showed 40% of pregnant women consuming a snack (Daba, Beyene et al. 2013); and, a study in Samre woreda of Tigray showed that 29% of lactating women consumed a snack (Hailelassie, Mulugeta et al. 2013).
 - ⇒ TIPs demonstrated that adding a snack was the most successful way to add to food quantity: more than adding food at each meal or trying to add an extra meal. Adding a snack was more successful with women than with adolescents (possibly because adolescents were asked to add two snacks per day). Uniformly women could add only one snack a day even when asked to add two. In SNNPR acceptance of an additional snack was higher than in other regions.
 - The main foods that were used for snacks were ‘*kocho*’ and ‘*gomen*’ in the SNNPR. Potato, roasted cereals, bread, *injera* and other food items were available at homes in other woreda.
 - The women liked having a snack as it relieved their hunger and they felt strong.
 - The women did not face deterrence from the family members as they have convinced their husbands that it is good to consume snacks in between meals to improve their own and their fetus’s/baby’s health.
- The quantitative cohort study showed that about half the women are eating a smaller amount of food during pregnancy than they do normally. The qualitative research found three reasons: 1) women in their first trimester of pregnancy reported eating smaller

portions of food because they were experiencing nausea and/or had aversions to specific foods. 2) Some women reduced their food intake later in pregnancy in an effort to avoid delivering fat/big babies, which they believed would make their deliveries more difficult. 3) Some women said there was not more food to eat in the house.

⇒ TIPs also found that women were eating very small portions of food at meal times and although women during lactation expressed that they felt hungry, they were not eating more than normal.

⇒ Women expressed the idea that they and their baby would be healthy if they ate more, but they also had many hesitations including the three mentioned above.

⇒ Very few women were offered the recommendation to add food to their plates during meals. Although numbers are very small many participants did not practice the trial successfully. It is unclear why this was case, but is a practice that should be promoted especially with lactating women.

⇒ Although *shiro* is a dietary staple and eating more of it, or more pulses generally, would boost to dietary intake, the recommendation was not pursued with many and with those who were asked, the trials were not positive.

- Pregnant and lactating women generally eat the same type of food that they ate before pregnancy. The quantitative cohort study showed that about 20% of pregnant women are adding different foods to their diets while 20% report eating a smaller variety. Diet diversity is poor. The diets consist primarily of grains such as bread, pasta and *injera* (made from combinations of sorghum, millet, maize, and/or barley with or without *teff*) and legumes (pulses) in the form of *shiro*. Women's consumption of animal-source foods was infrequent. When they are eaten, eggs appeared to be the most commonly consumed animal-source food, while meat and poultry are sometimes available on holidays. Vegetable and fruit intake fluctuates seasonally, but is low. Breakfast was particularly limited in diversity: pregnant and lactating women reported that their typical breakfast consists of caffeinated beverages and *injera* (bread).

⇒ TIPs found that food diversity was poor for the majority of women. Efforts to improve diversity were difficult. The most successful improvements were the addition of an egg and the addition of dark green leafy vegetables. These were both subject to availability of the food in the home. There was limited purchasing of these foods.

⇒ The use of *telba* (linseed/flax seed), although tested with only a few women, seemed an acceptable addition offering a variety of nutrients and importantly a good source of lipids. *Telba* is roasted and ground and used in a variety of foods. *Telba* is thought to facilitate delivery by making the uterus more relaxed and elastic.

- An important influence on diet quantity and quality for pregnant and lactating women is fasting, particularly among Orthodox women (although these women are allowed to exempt themselves from fasting). The quantitative cohort study showed that the majority of Orthodox women observe some fasting during their pregnancy. One quarter of Orthodox pregnant adolescents (15-18 years old) do not fast and in general fasting is less rigorous among pregnant adolescents. Half to three-quarters of the Orthodox women who observe fasting during pregnancy forego animal source foods.
- ⇒ During the TIPs inquiry about 20% of the adolescents and women were fasting at some point. All of them were Orthodox with the exception of one Protestant. Three-quarters of those fasting were eating the same number of meals (although often timed differently than normal to allow some hours of fasting during the day) and following a normal diet with the exception of no animal source foods.
- The USAID|ENGINE qualitative research found that the only time that women appeared to consume more or special foods was during the first 20-40 days after delivery when families strived to ensure that women received special beverages and foods believed to help them recover their strength and improve breastfeeding. Husbands, for example, reported making an effort to slaughter a cow, sheep, or goat for their wives soon after delivery. Grandmothers reported preparing special, enriched broths, stews, and drinks believed to help new mothers regain their strength and to produce more breast milk for their infants. Following this period of recuperation, while many lactating women reported feeling hungrier than usual, generally they did not significantly change their diets with the exception of an extra effort to consume beverages believed to increase breast milk production and produce thicker, more nutritious breast milk.
- ⇒ TIPs confirmed that even though hungry, lactating women did not increase their food consumption and although they thought that animal source foods and soups are helpful to rebuild their body and increase breast milk production they often were unable to put these beliefs into practice. The soup frequently mentioned to improve breast milk production is a grain-based soup, *mitin*.
- ⇒ Of note is that Mirinda (orange soda) was frequently mentioned by adolescents and pregnant and lactating women as a good drink for them and when they could afford it, it seemed the beverage of choice.

3. Observations on Other TIPs Outcomes of Nutritional Consequence

The TIPs inquiry uncovered promising areas for change that could impact women's nutritional status that are outside dietary improvement. Again, it is unfortunate that we have little insight from the trials into why some of these changes worked so well and what the dynamic was within the household with such practices as ask shifting. One observation about the non-dietary changes is that they were successful because they require few resources / expenditures.

- Iron-folic acid supplements (IFAS), especially when coupled with reducing coffee/tea drinking during mealtimes offers promise for being able to improve iron status during pregnancy and

the post-partum period. Even though women who agreed to start or return to taking IFAS had to get their tablets at a health facility, the vast majority did. Most took the tablets for the duration of the trial and although a few reported having some side effects, overall women reported feeling better. Supplementation coupled with changing coffee drinking habits from meal time (allowing for better absorption of iron from food and potentially the supplement) could help women feel better, more energetic and in turn translate into improved food intake.

Although shifting coffee drinking seemed to be a successful trial, some of the reporting is confusing. The best interpretation is that women were reluctant to stop eating when they drank coffee with friends. Eating a small amount of food as part of the coffee ceremony is traditional. It seems though, that they could shift from drinking coffee at main meals, which is the point. Unfortunately, the substitute liquid that they were drinking with their meals was never specified. However, the success of the recommendation to increase water intake may point to some of this water is being consumed at meals in place of coffee.

Of interest in this trial is that women were able to get IFAS from the health facility for this trial, but when they were asked to go to the health facility for ANC or for post-partum check they seldom followed through. Perhaps many of the women sent someone from their family to get the IFAS. This possibility needs further exploration.

- Task shifting, especially for adolescents and lactating women proved possible. Of interest is that it was more successful among adolescents and lactating women than for those who were at various stages of their pregnancy. Due to limited analysis it is difficult to understand why and what kind of negotiation was needed within the family for this to be agreed upon. The tasks tended to be those that require time—for example, fetching firewood and water. In the adolescents' trials it was reported that several male partners assumed some of the tasks while in other trials it seemed that older children were taking on most of the work.

PROGRAM IMPLICATIONS

This research reinforces what is well known: women in the rural areas of Ethiopia have poor diets and few nutrition-related practices that promote beneficial nutrition outcomes. Changing this situation is especially urgent for adolescents and women who have high nutritional requirements during pregnancy and lactation in order to foster their own health and well-being, and to address high rates of stunting and promote healthy development among infants and young children. Improving diet intake and nutrition-related practices has proven to be particularly difficult for those adolescents and women in families who live in food insecure areas like those in this study. For that reason, this study employed the human-centered design research approach, Trials of Improved Practices to engage adolescents and pregnant and lactating women, and their families, in diet and nutrition-related behavioral improvements. While the outcomes from the study were not as robust as expected, there are findings that point to a positive path forward and that can make a valuable contribution to the behavior change strategy and the communications that support Growth through Nutrition.

I. The social context and certain perceptions

Define nutrition as a family affair.

Formative research has shown clearly that the home and family is the nexus of influence on nutrition behaviors and related practices. Women are proud and defensive of their roles as strong and capable mothers and wives who run their households and take care of their families. Similar to other research, men play a role in multiple aspects of family life: related to food and nutrition, they decide or participate in deciding what foods are grown and /or purchased. However, in this TIPs study the partnership between husband and wife in making these decisions pointed to joint decision-making or decision-making by the woman, rather than male domination particularly tied to food purchases. None-the-less even if decisions are not discussed, male approval is expected. Older women, (mothers and mothers-in-law) also play a role: offering advice and either actively or passively approving or disapproving an adolescent's or woman's practices. The role of the older women seems greater in the case of the adolescent when compared to her slightly older counterpart. It is critical that all family members are active supporters of changes important for adolescents and women's nutrition.

Orient specific actions taken by husbands and older women that are good for the pregnant adolescent or woman as actions to protect the well-being of the family.

Ethiopian society expects women to prioritize their husbands and other family members over themselves, for example when allocating food at home. The one time traditionally that is an exception is the immediate post-partum recuperation period (15-40 days in most families) when women are provided with an improved diet and special care and support. The rationale

for this is that this extra care is good of the family—the mother and the new baby. This notion of improving family well-being by “protecting” the woman merits promoting beyond just the few weeks after giving birth. [Note: this might be slightly different for the adolescent. While eating poorly they seemed to have others watching over them more and help from adult family members for chores]. Women care about small acts of kindness and acknowledgement they get from husbands and other family members. Transform support for the health of the pregnant or post-partum woman as integral to family well-being. One of the key actions here is supporting the woman with household chores. This concept can be extended to approval of her eating snacks, going for ANC, and taking IFAS.

Orient specific actions to enhance the pride a woman takes in managing her family and in putting her family first.

For the woman when she refuses to eat more or to eat food outside of family meals she believes it shows that she prioritizes her family. Women do this in spite of feelings of hunger, especially during lactation. And, they do this in spite of wanting to be healthy and knowing that some of their practices run counter to this. Promoting family well-being by maintaining one's strength and energy should be used as a motivation for improved dietary intake, or in other words, a pregnant or lactating woman in a weakened state is not able to ensure the family's welfare. Adding to this concept to the promotion of snacking could be the idea that women's efforts to keep up their strength while not disrupting family meal patterns shows that they have only the best outcomes in mind for all: they are clever, minimizing expense for maximum family benefit.

Focus on particular foods as important for health, strength and beauty rather than defining the need for a balanced or diverse diet.

The TIPs demonstrated that there is a very limited set of foods and practices that women are willing to, and can, do. While nutrition communication often centers on women understanding and eating a “balanced” diet, the research found that in Ethiopia the idea of a balanced diet is non-specific and generally unhelpful to promoting a healthier diet. Instead of working to change this concept, it would be more effective to support access to and use of a few key foods. And by promoting the few foods for strength or health, rather than for improved weight gain during pregnancy the concept of foods leading to a fat or large baby could be avoided. The STAR foods concept introduced in ENGINE should be further developed and used beyond consumer education in markets and throughout the supply chain to encourage production of these foods whether commercially or at home.

Always promote the idea of a healthy Ethiopian diet: increased consumption of staple grains (not sweet foods) along with specific nutrient-rich foods that are local and seasonal to ensure a minimum intake of calories.

Adolescents' and women's diets were poor not only in micronutrients, but they appeared to be calorie deficient—low in carbohydrates and fats. This was particularly true of the pregnant women who tended to eat small quantities for multiple reasons. Women expressed, for several trials, that they needed something in their stomachs, for example to take coffee or their iron tablet. This notion of having something in the stomach to buffer ill-effects of pregnancy could support a mild increase in food intake and not add to the fear of having a larger baby.

[Work with religious authorities to lessen the nutritional burden of fasting on pregnant and lactating adolescents and women.](#)

Given the poor diets of women generally the additional constraint of avoiding animal source foods or avoiding food even for partial days is significant. Although reports were that women continued to eat the same number of meals while fasting as they did in normal times, meal quantities were small and meals were almost entirely grain-based. Even though women said they could increase the amount of legume they would eat to replace animal source foods generally women did not increase their consumption of pulses/*shiro*. Recognition by religious authorities of women's exemption from fasting or ways they can compensate during the religious observance due to their status would be a significant step to improving what is a poor dietary profile. The efforts that ENGINE and now Growth through Nutrition have made to work with the Orthodox church to help people realize that it is acceptable (necessary) for pregnant and lactating women to abstain from fasting are important because there is no other authority able to change these practices.

2. Specific Dietary Changes

[Reinforce the practice of pregnant and lactating adolescents and women eating a “snack”.](#)

This recommendation was one of the most successful. Women know what a snack is and have specific foods that they consider snacks. Those foods are primarily grain products, such as toasted mixes of cereals and *injera*. Many women were asked to add two snacks a day. While only a few could manage two, the majority managed to have one snack. The biggest motivator is that snacks help control hunger. Especially lactating women reported feeling better after eating a snack. Snacks should be promoted with specific ones recommended in each region to use local and seasonal foods. Developing special snacks could be an activity promoted in women's groups and introduced at agriculture fairs.

[Prioritize adding green leafy vegetables or other vegetables that are in the household.](#)

Generally women's diets are poor in fruit and vegetables. However, a high percentage of women when asked to add a vegetable could add dark green leafy vegetables (primarily collard greens/kale). Women did not express a willingness to buy vegetables, but when they were available, they readily added them to their diets. Through the agriculture activities of the

project these leafy vegetable can be encouraged, either in family plots or sack gardens so the greens are near the house and available for family consumption.

Prioritize adding an egg or using milk every day.

Women's diets are deficient in animal source foods. While adding a flesh food is not possible for most women in these food insecure woreda, many of those not fasting agreed to try to add an egg or use milk. While few women could manage an egg or milk every day, those who had a chicken or access to milk were successful in adding these food to their diets at least several times per week. Adding an egg was particularly well liked because egg is easy to cook. Of note is that this recommendation was particularly successful among the adolescents in the trials.

Expand the use of *telba* (flax seed) or another high nutrient dense local or seasonal food.

Telba was frequently reported as a good food for pregnant women because it softens the uterus and expedites labor and delivery. Flax seed is an excellent source of many micronutrients as well a good source of healthy fats. The trials showed that women who were encouraged to use *telba* and *telba* products in their diets were successful because *telba* was readily available. A rapid survey should be made of different preparations using *telba*. The trials reported its use in a "sausage" where the *telba* is roasted and ground and molded into a sausage, while other women implied that it is part of a grain soup and yet others mixed the *telba* with sugar and ate it for a snack.

3. Other nutrition-related practices

Prioritize IFAS for all pregnant women and post-partum for at least the first 6 months.

The trials of IFAS were highly successful, especially considering that women had to get their tablets from the health facility. Based on the trials there is no reason that IFAS compliance should not be near optimal. The main problem with IFAS may be tablet availability in the health facility and the protocols for the tablet distribution, such as making sure that women get enough pills to hold them at least until their next scheduled ANC visit.. Women reported feeling better after taking the tablets and they seemed to persevere through mild side effects when told they might happen. Women controlled feelings of nausea by eating something when they took the tablet, and taking the tablet at night. A few women minimized their side effects by taking the table every-other day.

Use of ANC and PNC services is directly tied to women's use of important preventive services and measures such as IFAS and to receiving personalized counseling on diet. While most women use ANC many often miss visits and few women go to PNC. What the TIPs pointed out was that those women who had never gone to services or who had stopped, even after personal counseling on the need to go and urging to go, did not attend. These women need special outreach to understand why they do not go and may need direct family support. Also, if

the problem is distance and this affects many women, then innovative schemes are required to bring services closer to the kebele. TIPs also pointed to the need for ANC services to offer individual, personalized counseling on diet to women. Many of the food choices they make while pregnant are their own and they require guidance.

[Encourage coffee and tea at time other than meal times.](#)

The recommendation to not take tea or coffee with meals was offered in an attempt to reduce interference with the absorption of dietary iron. While many women were willing to try this, the recommendation was confused with the idea of not eating at all when drinking coffee. It is tradition, if invited for a coffee ceremony to eat a small amount of food while drinking coffee. Also, women did not want to drink coffee without food. So, while this recommendation should be part of the package, the recommendation needs to be clear: Coffee should be avoided with main family meals; water can be taken with meals, and, when drinking coffee a small snack is fine.

[Encourage women to drink enough fluids, promoting local beverages](#)

There was a sense among the investigators that some women, particularly lactating women were not consuming enough fluids. In response to being asked to drink more fluids women were able to drink about an additional liter. The liquid of choice was water although when asked about fluids that are good for a pregnant or lactating women several local liquids were mentioned that should be encouraged. Miranda, the orange soda, (as well as other sodas in some places) was also favored. The high status of this drink given the sugar content and its high cost should be discouraged. In one area of Amhara women mentioned the local beer being good for milk production. This would be the only local beverage that should be avoided.

[Support task shifting](#)

Most women regardless of the status of their pregnancy continued working as usual. The idea of recruiting other family members to help with some of the tasks that required heavy lifting such as fetching water and wood was successful. The adolescents seemed the most able to find other adult members of the family to help with chores while the women had to rely on older children or an older woman if there was one present in the home. It was unclear how much husbands pitched in to help as they said they could not do household chores, although they were supportive of the notion of task shifting. Creating opportunities for constructive family dialogue around task shifting would be beneficial for women since those who got help at home reported resting more and feeling better. Those women also reported fewer ailments such as headaches.

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APPENDICES

APPENDIX A: GLOSSARY OF LOCAL FOODS

Abish	Fenugreek tea, good for abdominal pain during pregnancy.
Alicha (wot)	Usually made with turmeric, which gives the sauce (wot) a light yellow color.
Ambasha	Round, white, wheat flour flat bread (about two inches thick). The top of the bread is scored using a knife to make it easier to break. Originated in the Tigray region, where everyone eats ambasha for breakfast, usually with tea.
Areke	Local alcoholic beverage, clear white in color.
Atmit	Thin gruel made of whole grain flour.
Awaze	Red chili pepper powder mixed with water and areke or tej (honey wine), a condiment that accompanies meat and or <i>injera</i> .
Bula	False banana bi-product. A white flour cooked with milk or water; similar to thick semolina.
Enset	False banana plant from which bula and kocho is made; builds the body.
Fafa	Local baby food combining soy and whole grain flour; locally factory made baby food.
Firfir	Fried onions, oil/spiced butter, berbere (red chili pepper powder) and salt. Water is added to the thick sauce and simmered. Small, dry pieces of <i>injera</i> are combined with the sauce. Salt is added liberally to this spicy dish. It is popular because it is easy to make and requires few ingredients. Pregnant women perceive that it makes them thirsty: "It lets us drink lots of water." Considered a morning or breakfast food. Also perceived to increase breast milk production.
Fitfit	Similar to firfir , but made with sauce. A mild sauce is made with onions and either meat (if available) or potatoes and carrots. A lot of water is added to make a thin/watery sauce. Pieces of <i>injera</i> are soaked in the sauce and fed to children 6 months of age and older.
Gomen	Collard greens, a dark green leafy vegetable. Can be found in the wild. Gomen is not allowed for pregnant women and babies in some places for 2 to 3 months. Some mention growing it in their backyard. Believed to contribute to health and contain vitamins, but also to cause cramps and diarrhea in breastfed infants, so traditionally avoided. Can be eaten during fasting. Considered food for poor people.
Injera	Thin <i>teff</i> flour pancake eaten with everything, often as a starch accompaniment to stew or other "wot"/sauce.
Keneto	Non-alcoholic barley beverage believed to help with breast milk production- same as keribo. Keneto is the Christian name of this beverage.

Keribo	A non-alcoholic barley beverage- same as keneto; helps with breast milk production. Keribo is the Muslim name of this beverage.
Kita	A dry flat bread with a chew consistency similar to a chewy pretzel (but without the salt topping). Sometimes mixed with sugar and fed to children; used to train children how to eat.
Kocho	A false banana derivative, cooked in a pan like flat bread. Has a rubbery consistency. Is traditionally eaten with collard greens, minced meat and dry cottage cheese. A staple food for SNNP region; mentioned as something that is easily acquired and available. Commonly eaten during fasting time. Babies should not eat it until they are more than 1 year old. Women generally harvest kocho.
Kolo	A whole barley grain, dry roasted in a pan, sometimes mixed with peanuts. A popular local snack, kolo is described as a food that upsets pregnant women's stomachs; also not something that babies can tolerate; associated with "poor" people; may also increase breast milk production.
Miten	A word used to describe a variety of different grains (often as many as 12) used to make the gruel flour; for example, miten flour or miten shiro.
Muk	A thin smooth gruel made with whole grain flour and water; also called atmit.
Nifro	Any boiled cereals and legumes.
Shiro	Chickpeas or dry peas with spices, a little red chili powder, and garlic ground into flour. Shiro flour is cooked with water, oil and onions into a wot (sauce) and eaten with <i>injera</i> as shiro wot. Can be cooked with oil, onion, etc. Some women describe it as unappealing during pregnancy. Can be suitable for babies. Described as an inexpensive food. May be a substitute for meat.
Teff	<i>Teff</i> flour is mixed with water, fermented for a few days, and cooked into a flat pancake known as <i>injera</i> , the staple food of Ethiopia. Prepared for consumption and sale. Perceived as helping with breast milk production. May be used to make gruel for a baby at least 6 - 7 months old.
Telba	An oil seed, linseed / flax seed in English. It is high in omega 3 fatty acids. It can cause loose stools and nausea if eaten in high quantities. A sausage called <i>Telba</i> is prepared from the seed after roasting and grinding; it is eaten with <i>injera</i> .
Tella	Germinated barley brew with alcoholic content. Very commonly mentioned as something that can contribute to production of breast milk. Some say pregnant women should moderate their intake, others that they desire it. Some say it is not for babies; others that it is may be an early drink for babies.
Tella Kita	Tella kita consists of roughly ground corn, sorghum, <i>teff</i> , and barley, which is later baked, torn into pieces and mixed into the tella during the last stage of preparation to complete the fermentation. Kita made for tella is not eaten and different from the kita eaten as bread.
Wot	A sauce. There are several different types of <i>wot</i> . <i>shiro wot</i> , meat <i>wot</i> , <i>misir</i> (lentil) <i>wot</i> , <i>alicha wot</i> , potato <i>wot</i> , <i>doro wot</i> (chicken).

APPENDIX B: TRIALS OF IMPROVED PRACTICES COUNSELING GUIDE

General Problem	Specific Problem identified	Practice to try and counselling for the practice
Woman's condition or practices decreases ability to eat healthy diet		
Women's appetite is poor	Woman is nauseous	--Eat small amounts of food, but more frequently --Snack on pieces of <i>injera</i> , spaghetti --Drink between, not with meals --Rest after eating, but don't lie down
	Woman chews khat	--Stop or decrease
	Woman takes tonics or other medications	--If appear to affect appetite, decrease or stop
Woman is fasting	Prevents consumption of particularly healthy foods	--Find a way that woman is comfortable with consuming foods often not eaten during fasting or in finding substitutes
Woman eats too many foods of poor nutritional quality	Woman is consuming sugary biscuits, cake, candy or other sugary foods	Replace all or some biscuits, cake, candy, or other sugary foods, with a nutritious snack like fruit, seeds/nuts, milk, _____, _____ (specify)
Woman is not eating enough food		
Food frequency is poor	Woman is not eating three meals per day	Cook and consume one extra meal every day, but keep others the same Or consume leftovers from the previous meal that have been covered and placed in a cool place
	Woman is not eating snacks	Consume a non-sugary snack between meals (i.e., fruit, nuts/seeds, milk, boiled sweet potato)
Food quantity/ meal is poor	Woman eats extremely small portions of food at a meal	--Add a piece of food like additional portion of <i>injera</i> to the meal (specify) --Add one more spoonful of each food available in a meal (specify)
	Woman is consuming tea or coffee with meals	Consume tea or coffee in between meals
Woman is not eating a sufficiently diverse diet		
	Woman is not eating grains	Consume at least 1 cup or one piece of <i>injera</i> three times per day
	Woman is not eating lentils or pulses	Consume at least ½ c. of cooked legumes per day --Consume more shiro (check); ½ cup

	Woman is not eating any or enough animal foods (dairy, eggs, meat, fish, poultry)	Consume at least source per day Be specific about what mother will try to add and the amount; --If woman cannot add an animal source every day can she increase the weekly frequency? (be specific about the frequency she will try)
	Woman is not eating nuts or seeds	Consume at least 1/4 c. per day
	Woman is not eating green, yellow or orange fruits or vegetables	--Add _____, _____ (specify)
	Woman is not eating other vegetables	Add ...
	Woman is not eating other fruit	Add only if readily available: _____
Woman's fluid intake is low		
	Woman is not consuming enough liquids	Consume at least 1 liter of fluids per day if you are pregnant Consume at least 2 liters of water per day if you are breastfeeding Drink treated water throughout day after tasks
Woman's workload is too onerous for healthy pregnancy & lactation		
Woman has work that includes heavy lifting	Woman has not shifted her workload	-Find household support for heavy tasks (specify)
Woman has no time to rest		Find time during day when woman can sit/lie down briefly --sit while doing some tasks --task shifting to others in HH --sit while breastfeeding so child can empty both breasts
Woman is not taking IFAS		
	Woman has not gone to ANC	--Make first visit
	Woman has never taken IFAS	--Start taking IFAS every day --Take it before going to bed --Take it with food (IFAS are good for your health and your baby's health throughout pregnancy and breastfeeding)
	Woman has experienced side effects and has stopped	-Try to restart IFAS (You may experience unpleasant effects like a stomachache or dark stools. These are not dangerous and should go away in a couple of days)