



The added value of virtual facilitator as a Social and Behaviour Change Communication approaches to improve Infant and Young Child Feeding, women diet diversity, women empowerment and WASH practices: a quasi-experimental design study

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Executive summary

Introduction

Improving key nutrition practices requires change at the individual, household, and community levels, and in services for mothers and families—all of which must be supported by an enabling environment. Growth through Nutrition Activity includes SBCC activities as part of its strategic approach to bring about significant and sustainable improvements in maternal dietary and infant and young child feeding practices. The project works to ensure that consistent, locally adapted, actionable messages are reinforced at each level for interventions to be more likely to result in significant improvements in the short term and sustainable progress in the long term. In addition to the existing SBCC approach under Growth through Nutrition, a new tool designed to complement the ECCs called the Virtual Facilitator (VF), a pre-recorded audio message with actors modelling the desired knowledge and behaviours, is anticipated to make the SBCC program more robust and scalable. Therefore, the objective of the study is to evaluate the added value of the virtual facilitator tool to the existing ECC program for improving IYCF practice and nutritional status of women and children in Ethiopia under the Growth through Nutrition Activity program.

Methods

The study was conducted in selected districts of Amhara region (Basoliben Woreda) and Oromia region (Becho and Girar Jarso in East and West Oromia) where Growth through Nutrition Activity operates using a quasi-experimental design with a control group. The baseline data collection was conducted in Dec 2018 while the endline data collection was completed in Nov 2019. Pregnant and/or lactating women who were Growth through Nutrition Activity program beneficiaries /most vulnerable household (MVHH) members in the selected livelihood program were the study population for both study groups. In each woreda, two kebeles were selected, one kebele to receive ECC and VF and other kebele to receive ECC without VF. In the control (ECC only) group, the participants received monthly comprehensive enhanced community conversations (ECCs) meetings led by in-person Community Change Agents (CCAs) with standard module content, take-home materials with behaviors or activities to discuss and try at home with the family, and home visits scheduled by CCAs. The intervention (ECC+VF) group received all the same components as the control group, but also had the addition of the in-person ECC meetings supplemented with audio-recorded Virtual Facilitators sessions designed to complement the monthly meeting lesson or topic. The questionnaire was designed to include demographic characteristics, maternal and child health and diet indicators, water, sanitation

& hygiene and gender perspectives, couple relationships and communication, all of which are targeted by the ECC and ECC+VF trainings. Significant differences within the groups is measured using chi-square test. To examine changes between groups (intervention vs control) at baseline and follow-up assessments, a difference in difference analysis was performed using generalized linear mixed model (GLMM) was fitted taking the clustering effect at kebele level into account using STATA version 15.0 (Stata Corporation, College Station, TX). A p-value of less than or equal to 0.05 was considered significant for all tests.

Results

There was a 5% loss to follow up during the endline due to various reasons (mainly relocation and refusal of participation) to bring down the total participants from 410 to 390. The results indicated that, there were improvements in child diet diversity and minimum acceptable diet both in control and intervention groups by about 20 percentage points from the baseline values. Women diet diversity has also shown improvements by 7% among control and about 16% among intervention groups from their respective baseline values. There were also improvements from baseline to endline in terms of participants reporting to wash their hands during various critical times. Joint decision making about visiting ANC has improved in both groups by over 15 percentage points from the baseline value though husband's participation during ANC visits showed improvement only in the control group. Similarly, there was a positive change in the consumption of legumes and nuts, dairy, eggs and vitamin A rich fruits and vegetables from the baseline value. The ECC program has also enabled the participants to make joint household decision making and controlling resources which was changed positively from what was exhibited during the baseline survey before the participants were enrolled in the ECC program. Although we have seen significantly improved women workload in the endline as compared to baseline, the majority of respondent still see as a woman primary role in taking care of child and home.

The changes from baseline values which are attributed to using VF were also assessed. Accordingly, 13.6% of the changes in terms of IFA intake for three months and above, 14.3% of the changes in having hand washing facility in the household, 9.7% of the changes in hand washing with water and soap/ash and 14.5% of the changes in having separate space for livestock and 12.3% of joint decision making on the use of agricultural products were attributable to the use of virtual facilitator in the deliberation of the ECC program. All these changes were found to be statistically significant. Though

not statistically significant, the intervention has also brought large improvements in the other indicators. Accordingly, child minimum diet diversity, minimum acceptable diet and women diet diversity have improved by 20%, 18% and 7.9% from their baseline values respectively. Similarly, there were improvements in joint decision making on husbands' income (3.6%), responsibility on to raise small animals (6.1%), using the animals (3%) and decreased workload (8.4%) due to the intervention. Regarding women communication with their spouses, the study identified that there were 5.2% and 5.7% increments in women discussing about nutrition with their husbands and self-initiating the discussion respectively. Compared to the baseline report, seeking approval from husbands or anyone in the household has also decreased by 6.3% due to the intervention.

Conclusion and recommendation

This study covered most of the Growth through Nutrition project activities including nutrition sensitive reproductive health care services, water, sanitation & hygiene, child health & nutrition, mother dietary diversity and child's food group diversity, couple relationship and gender perspectives. Accordingly, positive changes have been exhibited in maternal health care service utilization, WASH, IYCF practices and women decision-making power and communication. Albeit the statistical significance, a large to moderate positive changes from baseline values were exhibited among participants in the intervention group regarding most of the outcome indicators. Therefore, it is important to strengthen the use of virtual facilitators as a modality to transmit standard nutrition messages during the ECC programs for a positive change mainly in WASH and IYCF indicators. The findings strengthen the notion that using a combination of SBCC has advantage over a single method to improve behaviour and bring about expected changes. As the findings showed varying magnitude of changes across the outcomes studied, it is also equally important to tailor the use of virtual facilitators with a focus on the indicators they positively affect more. Continuous monitoring and evaluation of the ECC implementation has also a paramount importance to ensure compliance of intervention administration in order to harness its maximum benefit

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Acronyms

ANC	Ante Natal Care
CCA	Community Change Agents
ECC	Enhanced Community Conversation
GLMM	Generalized Linear Mixed Model
GtN	Growth through Nutrition
IFA	Iron Folic Acid
IYCF	Infant and Young Child Feeding
MAD	Minimum Acceptable Diet
MDD	Minimum Diet Diversity
MVHH	Most Vulnerable Households
NGO	Non-Governmental Organization
ODK	Open Data Kit
SBCC	Social Behaviour Change Communication
SCI	Save the Children International
SD	Standard Deviation
SNNPR	Southern Nation Nationality People Region
SUN	Scaling Up Nutrition
VF	Virtual Facilitator
WASH	Water Hygiene and Sanitation
WHO	World Health Organization

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Chapter 1: Background

Across the globe, the context for understanding nutrition has been changing. The focus of most government and development partners' strategies is on addressing the first 1,000 days of life - the period from pregnancy to a child's second birthday. In the recent past, there have been several international initiatives specifically attached to undernutrition like the Scaling Up Nutrition (SUN) movement [1]. In addition, this movement can be seen as a symbol for an increased interest in nutrition, also demonstrated by political commitments in several countries which have made significant advances in terms of building multi-stakeholder platforms, aligning nutrition-relevant programmers within a common results framework, and mobilizing national resources in order to address the 1,000 days window of opportunity [2].

The main area where nutrition interventions focus in general is on multisectoral collaboration for both nutrition-sensitive and nutrition specific programs. Nutrition sensitive interventions encompass different sectors such as agriculture, health services, social protection and safety nets, early child development, education, and water, sanitation and hygiene (WASH) to affect the underlying determinants of nutrition. Nutrition specific programs address the immediate cause of undernutrition, and include interventions like maternal dietary or micronutrient supplementation, promotion of optimum breastfeeding, complementary feeding and responsive feeding practices, dietary supplementation, diversification, and micronutrient supplementation [3].

According to a World Health Organization (WHO) report from 2017, globally 155 million (23%) of all children under 5 years old were stunted, 52 million children under five years were wasted, and 17 million children were severely wasted in 2016 [4]. These figures potentially translate into impaired cognitive development and physical incapacity for the children and the perpetuation of the intergenerational cycle of malnutrition. To boost the comprehensive efforts to address these issues, social and behaviour change communication (SBCC) can play a pivotal role in nutrition programming and has already been incorporated into many agriculture, social safety net, early child development, and school health programs [3].

While SBCC is a recognized tool and program component for the delivery of high impact and cost-effective nutrition interventions and the prevention of undernutrition, there is still limited research on the effectiveness of SBCC tools and approaches and their specific contribution to achieving overall project goals and outcomes. This study will contribute to this body of evidence by investigating the

benefits, if any, of a new SBCC tool added (virtual facilitator) to enhance a currently implemented SBCC nutrition program. Social and Behavior change communication (SBCC) activities are an essential program component for improving maternal, infant, and young child nutrition. Building on recent global evidence that SBCC theories and approaches are effective for improving nutrition outcomes, various programs include SBCC as their main strategy in the goal towards improving maternal and child nutritional statuses.

The promotion of nutrition-related behaviours and an enabling environment during the first 1000 days of maternal and child nutrition comprises a large component of the overarching “Whole Household Nutrition” SBCC strategy of the project. Improving key practices requires change at the individual, household, and community levels, and in services for mothers and families—all of which must be supported by an enabling environment. Growth through Nutrition Activity includes SBCC activities as part of its strategic approach to bring about significant and sustainable improvements in maternal dietary and infant and young child feeding practices. The project works to ensure that consistent, locally adapted, actionable messages are reinforced at each level for interventions to be more likely to result in significant improvements in the short term and sustainable progress in the long term. The SBCC interventions in growth through nutrition activity are also aimed to unite all the project components and intermediate results, with the goal of improving the dietary practices of pregnant and lactating women, adolescent girls, and infant and young child feeding practices. It also aims to increase demand for nutrition and health services and improving hygiene and sanitation practices among target households [5].

Program Description

The Feed the Future Ethiopia Growth through Nutrition Activity is a project designed to improve the nutritional status of women and young children in Ethiopia’s four agricultural productive regions of Tigray, Southern Nations, Nationalities, and People (SNNP), Amhara, and Oromia, by focusing on the first 1,000 days (from conception to age two). The approach of Growth through Nutrition is via comprehensive and intensified multi-sectoral nutrition programming at community levels and linking of development and emergency efforts to build resiliency and sustainability of the nutritional and livelihood aspects of the communities/beneficiaries. The Growth through Nutrition Activity focused on 102 targeted district/woredas at the time of this study and now extended to 110 woredas with the aim of addressing stunting reduction through health service improvements, increased production and

availability of quality food, WASH products and services, as well as SBCC for improved nutrition and WASH behaviours.

Within this large-scale multisectoral project, the SBCC messages are distributed via communication materials (print and other media) and enhanced community conversations (ECCs), regular in-person group meetings facilitated by a trained personnel that promote the adoption of nutrition-related skills, behaviours and gender transformative roles, help people make positive changes within the contexts of their household and family environments, and use more interactive methods and activities to help adults learn and adopt new behaviours. The project is thus implemented by direct attention on bringing about change in the lives of the community through learning and adopting desired nutrition, WASH and livelihood household behaviours to achieve a reduction of stunting by 20% by the end of the project (2021). The primary target audiences for the SBCC ECC program are pregnant and lactating women (mothers of children under 2 years old), husbands of pregnant and lactating women/fathers of children under two years of age, and grandmothers of children under two years of age. In addition to the existing SBCC approach under Growth through Nutrition, a new tool designed to complement the ECCs called the Virtual Facilitator (VF), a pre-recorded audio message with actors modelling the desired knowledge and behaviours, is anticipated to make the SBCC program more robust and scalable.

Virtual facilitators, as one of First 1000 Days SBCC materials, are important component of the multimedia packages, which were designed under the ENGINE project for use during ECC programs. The materials facilitate the peer group activities, which consist listening to nutrition-related information, discussing nutrition-related information and experiences, singing nutrition songs, demonstrations, skills-building games, and role plays. The materials, combined with the activities, support an *experiential learning approach* to helping mothers, fathers and grandmothers build on the knowledge, experiences and skills they already have, and then practice the adoption of new behaviours and transformative gender roles [6]. To this end, the virtual facilitators serve as a standard medium to transfer a pre-recorded audio materials/nutrition messages using the voices of professional voice actors who play the roles of fictional characters. This ensures transmission of similar messages across participants and helps to create common understanding which is an important element in making our SBCC interventions effective.

Chapter 2: Research Objective

The objective of the study is to evaluate the added value of the virtual facilitator tool to the existing ECC program for improving IYCF practice and nutritional status of women and children in Ethiopia under the Growth through Nutrition Activity program. The aim of the study was to assess any benefits using quantitative data collection methods. A household survey was used to collect quantitative data related to knowledge and behaviours targeted by the ECC and VF programs in order to evaluate the outcome measures.

Chapter 3: Methods

Study setting

The study was conducted in selected districts of Amhara region (Basoliben Woreda) and Oromia region (Becho and Girar Jarso in East and West Oromia) where Growth through Nutrition Activity operates. The regions and districts were selected purposely and represent the various agroecological zones. The study used a quasi-experimental design. Quantitative data on outcome measures was collected at baseline and endline from an intervention group (ECC + VF) and a control group (ECC only).

Study design

A quasi-experimental design (before and after intervention approach) was used to assess the stated research objective.

Source and study population

All pregnant and/or lactating women in the selected district/kebele were the source population, whereas pregnant and/or lactating women who were Growth through Nutrition Activity program beneficiaries /most vulnerable household (MVHH) members in the selected livelihood program were the study population for both study groups. The participants for this study were pre-selected from a beneficiary list from Growth through Nutrition Activity based on their enrolment in the ECC groups.

Program Design and Participant Recruitment

The study was designed to collect data before the start of the ECC program in the study area (baseline) and then again after the completion of the program which runs for about 10 months (10 monthly sessions). The social worker staff of local implementing NGO are responsible for the local implementation of the ECC program and thus managed the logistics, training and administrative matters both before and during implementation of the program. The SBCC Managers under Growth

through Nutrition Activity in the study areas monitored the progress of the activity done by Community Change Agents (CCAs). At initial stages of the project implementation, the managers had a training on project monitoring and about the overall objectives of the study. These quality control methods were put in place to ensure that each participating group received the activity in the exact same way in terms of the time of the session frequency, duration, order, and content in each district and kebele.

In each woreda, two kebeles were selected for this research purpose by the SCI's SBCC team, one kebele to receive ECC and VF and other kebele to receive ECC without VF. The participants (pregnant or lactating mothers) in the kebeles were members of project beneficiary households, already selected by the local district administrator and approved by the project regional manager for participation in the ECC project. The participants assignment was evenly distributed across the selected kebeles, with each participant assigned to a treatment group based on the assignment of their kebele of residence. In the control (ECC only) group, the participants received monthly comprehensive enhanced community conversations (ECCs) meetings led by in-person Community Change Agents (CCAs) with standard module content, take-home materials with behaviors or activities to discuss and try at home with the family, and home visits scheduled by CCAs.

The intervention (ECC+VF) group received all the same components as the control group, but also had the addition of the in-person ECC meetings supplemented with audio-recorded Virtual Facilitators sessions designed to complement the monthly meeting lesson or topic. The Virtual Facilitator tool is pre-recorded audio material using the voices of professional actors who play the roles of two fictional characters, Ete Birtukan and Aya Mulat. Ete Birtukan is an older woman who is a nurse and an expert in maternal and child nutrition. Aya Mulat is her husband and a retired agriculture extension worker who is knowledgeable on nutrition and nutrition-sensitive agriculture. The Virtual Facilitator audio recordings are played on a mobile phone audio player and are designed to be turned off by the CCA when he/she hears a bell that signals the time to stop listening and start the group activity.

Sample Size Determination

The sample size (n) was determined using the difference between two proportions of the intervention groups (IG) and control group (CG). The sample was calculated using Gpower 3.1.9 with the following parameters: from the baseline survey findings, the proportion of children aged 6 to 23 months (both breastfed and non-breastfed) was 16.1% (82 out of the 508) are found to consume a minimum (at least

four) diet diversity (MDD) food groups; the prevalence of MDD ($P_2 = 16.1\%$) was used from the baseline study for Feed the Future Ethiopia Growth Through Nutrition Activity¹, for control group. By hypothesizing that the prevalence of minimum diet diversity would be improved by 15% in this study, proportion in intervention group (P_1) was 31.1% (15% + 16.1%). The level of confidence was taken to be 0.05 ($Z_{\alpha/2} = 1.96$); the power ($1-\beta$) was taken to be 80% ($Z_2 = 0.84$). Then the sample size was 250 [each group of the IG and CG comprise of 125]; and considering 10% contingency for loss to follow-up and by adding 1.5 design effect for the sampling variations and clustering, the total sample size was calculated to be 414. In total, 207 each for intervention and control groups.

Data collection

Data collectors were recruited with previous experience in a similar project (ENGINE) and master's degree holders who have ample experience in the data collection process. The questionnaire was designed to include demographic characteristics, maternal and child health and diet indicators, water, sanitation & hygiene and gender perspectives, couple relationships and communication, all of which are targeted by the ECC and ECC+VF trainings. A total of 12 data collectors and three supervisors received a training both during the baseline and endline surveys. The training theme included but was not limited to the introduction of the SBCC and ECC approach used in the Growth through Nutrition Activity program, preliminary aspects of the VF concept, ethical issues in undertaking research, and debriefing and review of the data collection tool and informed consent. Pretesting of the questionnaire and study procedure was conducted before the actual data collection. The baseline data collection was conducted in Dec 2018 while the endline data collection was completed in Nov 2019.

Data analysis

Quantitative data was recorded using Open Data Kit (ODK) questionnaires on WiFi-enabled handheld electronic tablets. The data was exported for cleaning, editing and analysis using statistical package STATA version 15.0 (Stata Corporation, College Station, TX). Simple frequencies were generated to see the overall distribution of the study subject with the variables under study across the two groups and between the baseline and endline. Significant differences within the groups is measured using chi-square test. To examine changes between groups (intervention vs control) at baseline and follow-up assessments, a difference in difference analysis was performed using generalized linear mixed model (GLMM) was fitted taking the clustering effect at kebele level into account. All continuous data were

checked for normality using the Kolmogorov-Smirnov test. Participants were analysed with ‘per protocol’ analysis to inspect the participants who were able to complete all ten sessions of the intervention arm. A p-value of less than or equal to 0.05 was considered significant for all tests.

Quality control

Data quality was assured through recruitment of an experienced and qualified data collection team, intensive training of data collection team before the baseline and endline data collection, electronic data collection tool with in-built validation rules, pre-testing of data collection tools and procedures, and close supervision of each data collection team from the research team.

Ethics and dissemination

The ethical aspect of the study was carried out in accordance and maintained through the operational guidelines and principle the Helsinki Declaration. The study was ethically approved by the Institutional Review Boards (IRB) of Tufts University. Written consent from each regional health office was obtained. All the study participants were informed about the purpose of the study and their consent was obtained before interviewed. The presentation of the findings does not refer any personal identifier of respondents but the general study population only. For those respondents who reported not attending antenatal care (ANC) and or taking iron-folate supplements (IFA), data collectors and supervisors counselled the participants to visit the health facilities to receive care. The final study report will be submitted to the district health offices, regional health bureaus and other relevant parties to make use of the evidence generated and program/policy recommendations.

Chapter 4: Results

A total of 410 participants were enrolled in this study during the baseline including both the intervention and control groups. There was a 5% loss to follow up during the endline due to various reasons (mainly relocation and refusal of participation) and a total of 390 participants were included in the endline survey, which are the basis for the analysis to identify the intervention effect.

Section 1: Socio-Demographic Characteristics

Participants were evenly split across region, woreda and intervention group. A small minority of households were female-headed (<7%). Most of the participants were age 29 years or less and had not received any schooling in both control and intervention groups (Table 1).

Table 1: Socio-Demographic Characteristics of Participants

Variable		Baseline n (%)		Endline n (%)	
		Control	Intervention	Control	Intervention
Region	East Oromia	67 (32.68)	69 (33.66)	64(32.32)	63(32.81)
	West Oromia	69 (33.66)	67 (32.68)	67(33.84)	64(33.33)
	Amhara	69 (33.66)	69 (33.66)	67(33.84)	65(33.85)
Woreda	Basoliben	69 (33.66)	69 (33.66)	67(33.84)	65(33.85)
	Becho	69 (33.66)	67 (32.68)	67(33.84)	63(32.81)
	Girar Jarso	67 (32.68)	69 (33.66)	64(32.32)	64(33.33)
Type of household	Adult Women and Men	190(93.60)	199 (97.07)	187(94.44)	187(97.40)
	Only Adult Women	13 (6.40)	6 (2.93)	11(5.56)	5(2.60)
HH size	≤ 4	91 (44.39)	91 (44.39)	78(39.39)	72(37.50)
	≥ 5	114(55.61)	114 (55.61)	120(60.61)	120(62.50)
Age of the participants	≤ 29	120(60.30)	114 (56.16)	114(58.5)	106(55.50)
	30-34	47 (23.62)	42 (20.69)	37(18.9)	44(23.04)
	35-39	26 (13.07)	37 (18.23)	33(16.92)	33(17.28)
	> 39	6 (3.02)	10 (4.93)	11(5.64)	8(4.19)
Age of youngest child	<6 month	44 (30.99)	51 (36.17)	11(5.70)	12(6.98)
	6-8 months	33 (23.24)	41 (29.08)	31(16.06)	22(12.79)
	9-11 months	32 (22.54)	24 (17.02)	40(20.73)	35(20.35)
	12-15 months	25 (17.61)	21 (14.89)	64(33.16)	62(36.05)
	16-23 months	8 (5.63)	4 (2.84)	47(24.35)	41(23.84)
	Yes	73 (35.61)	84 (40.98)	70(35.35)	73(38.02)

Mother any schooling	No	132(64.39)	121 (59.02)	128(64.65)	119(61.98)
Adult Female education level	No education	1 (1.37)	2 (2.38)	1(1.43)	0(0.00)
	Primary	64 (87.67)	62 (73.81)	61(87.14)	56(76.71)
	Secondary	8 (10.96)	17 (20.24)	8(11.93)	14(19.18)
	College and above	0 (0.00)	3 (3.57)	0(0.00)	3(4.11)
Household Adult Male education level	No education	115(62.16)	93 (48.44)	109(55.05)	85(44.27)
	Primary	56 (30.27)	77 (40.10)	60(30.28)	72(37.51)
	Secondary	14 (7.57)	15 (7.81)	17(8.59)	16(8.33)
	College and above	0 (0.00)	7 (3.65)	0 (0.00)	4(2.08)
Marital status	Never Married	3 (1.46)	3 (1.46)	2(1.01)	4(2.08)
	Married	193(94.15)	194 (94.63)	187(94.44)	184(95.83)
	Divorce/Widowed/Separated	9 (4.39)	8 (3.90)	11(4.55)	4(2.08)

Section 2: Maternal Health Care Services

Health care provision during antepartum, intrapartum, and postpartum care is a critical time period for the survival and wellbeing of both the mother and infant. Most of the participants in the current study received antenatal care (ANC) during their last or current pregnancy - in both the intervention and control groups at endline and baseline. At the endline survey, there was a significant difference between the control and intervention groups in relation to having four or more ANC visits for the recent pregnancy. To this end, 78 (46.43%) of participants from the control and 104 (60.47%) the intervention group reported to have at least four ANC visits during their last pregnancy.

Most of the participants, both during the baseline and endline surveys, reported having attended a government health center for ANC. Though there was no significant difference, majority of the participants reported to have made the decision to attend ANC services jointly with their husbands. Among them, about 57.14% of the control and 53.49 % of the intervention groups during the endline reported that their husbands attended at least one ANC visit during their last pregnancy. Standard guidelines for ANC include that every pregnant mother should receive iron and folate supplements as one component of antenatal care. There was a significant difference between the intervention and control groups regarding IFA supplementation where majority in both groups and during both surveys

have reported to receive the supplementation. The study identified that there was a statistically significant difference in the duration of IFA supplementation during the endline where 28.57 of the control and 59.50 of the intervention participants to have reported that they took the supplements for three or more months. (Table 2).

Regarding delivery services, majority of the participants, 159 (94.64%) from control and 163 (94.77%) from the intervention groups reported to have been advised by their health care provider to deliver at a health facility at the endline. Even though comparable proportion of participants from both groups and during both surveys delivered at home, there was a statistically significant difference between the two groups ($p < 0.05$) in terms of place of delivery for the recent pregnancy. The data also showed majority of the participants delivering at health centres. A significant difference was also exhibited between the control and intervention groups in terms of seeking postnatal care where there was a 10% increase among the intervention group and a 30% increase among the control group from baseline to endline (Table 2).

Table 2: Maternal Healthcare Services Characteristics of Participants

Variables		Baseline		Endline		\$P value
		Control	Intervention	Control	Intervention	
ANC during this/ last preg.	Yes	153 (74.63)	166 (80.98)	168(84.85)	172(89.58)	0.051
	No	52 (25.37)	39 (19.02)	30(15.15)	20(10.42)	
Number of ANC visits	< 4 ANC	106 (69.28)	98 (59.04)	90(53.57)	68(39.53)	0.040*
	4+ ANC	47 (30.72)	68 (40.96)	78(46.43)	104(60.47)	
Husband attended ANC	Yes	69 (46.62)	85 (53.13)	96(57.14)	92(53.49)	0.798
	No	79 (53.38)	75 (46.88)	69(41.07)	76(44.19)	
Joint decision about ANC	Yes	121 (81.76)	133 (83.13)	129(76.79)	139(80.81)	0.576
	No	27 (18.24)	27 (16.88)	36(21.43)	30(17.44)	
Received IFA supplement	Yes	131 (85.62)	127 (76.51)	153(91.07)	146(84.88)	0.008*
	No	22 (14.38)	39 (23.49)	15(8.93)	26(15.12)	
Duration of IFA suppl.	< 3 months	60(76.92)	56(78.87)	75(71.43)	49 (40.50)	0.004*
	≥ 3 months	18(23.08)	15(21.13)	30(28.57)	72(59.50)	
Advised to deliver at a health facility	Yes	124 (81.05)	131 (78.92)	159(94.64)	163(94.77)	0.637
	No	29 (18.95)	35 (21.08)	9(5.36)	9(5.23)	

Last child delivered at	At home	78(38.05)	67(32.68)	63(31.82)	60(31.25)	0.002*
	Hospital	22(10.73)	42(20.49)	39(19.70)	57(29.69)	
	HC/HP	76(37.07)	67(32.68)	93(46.97)	73(38.02)	
Received PNC within two days	Yes	66 (37.50)	104 (59.43)	133(68.21)	132(69.47)	0.004*
	No	110 (62.50)	71 (40.57)	62(31.79)	58(30.53)	

^sP values are estimated from the endline data

Section 3: Water Sanitation and Hygiene characteristics

During the baseline survey, 28% and 24% of the control and intervention groups reported that they do not wash their hands at all, but the endline survey identified that there were no participants who reported to not wash their hands at all. A statistically significant difference was exhibited at endline between the intervention and control groups among participants who reported to wash their hands after toilet, after eating and before feeding a child, where a greater percentage reported positively for each behaviour in the intervention group. Most participants among the control and intervention groups at endline reported using water and soap for washing hands, even though only around 30% actually had observed presence of ash/soap. There was a statistically significant difference in having a hand washing facility between the two groups. This study also identified that there was a significant difference between the intervention and control groups in having a separate place for livestock at endline (Table 3).

Table 3: Water, Sanitation & Hygiene Characteristics of Participants

Variable		Baseline		Endline		p-value
		Control	Intervention	Control	Intervention	
Circumstances where the respondents washed hands	Not at all	58 (28.29)	49 (23.90)	0(0.00)	0(0.00)	-
	When dirt is visible	136(66.34)	120 (58.54)	148(74.75)	143(74.48)	0.198
	After toilet	92 (44.88)	89 (43.41)	115(58.08)	132(68.75)	0.024*
	After cleaning child	48 (23.41)	24 (11.71)	58(29.29)	73(38.02)	0.541
	Before preparing food	180 (87.80)	186 (90.73)	176(88.89)	178(92.71)	0.174
	Before serving a meal	147 (71.71)	122 (59.51)	144(72.73)	147(76.56)	0.169
	Before eating	177 (86.34)	184 (89.76)	172(86.87)	161(83.85)	0.900
	After eating	149 (72.68)	116 (56.59)	142(71.72)	144(75.00)	0.033*
	before feeding a child	66 (32.20)	68 (33.17)	91(45.96)	114(59.38)	0.047*

	After feeding or attending to livestock or poultry	37 (18.05)	28 (13.66)	52(26.26)	66(34.38)	0.591
	After attending the fields/crops	13 (6.34)	16 (7.80)	26(13.13)	40(20.83)	0.053
	After handling farming equipment	11 (5.37)	14 (6.83)	28(14.14)	30(15.63)	0.514
	When I am reminded to do so	5 (2.44)	6 (2.93)	17(8.59)	12(6.25)	0.548
Materials used to wash hands	Water only	43 (29.25)	69 (44.23)	69(34.85)	59(30.73)	0.431
	Water and soap	103 (70.07)	86 (55.13)	125(63.13)	132(68.75)	
	Water and ash	1(0.68)	1 (0.64)	5(2.03)	1(0.52)	
Handwashing facility	Yes	118 (57.56)	91 (44.39)	131(66.16)	128(66.67)	0.047*
	No	87 (42.44)	114 (55.61)	67(33.84)	64(33.33)	
Type of hand-washing facility	Tippy tap	1 (0.85)	1 (1.10)	1(0.76)	2(1.560)	0.551
	Water basin with jug	117 (99.15)	90 (98.90)	130(99.24)	126(98.44)	
Location of handwashing facility	In the house corner	101 (85.59)	81 (89.01)	119(90.84)	117(91.41)	0.691
	Near the latrine	7 (5.93)	1 (1.10)	3(2.29)	4(3.13)	
	Others	10 (8.47)	9 (9.89)	9(6.87)	7(5.47)	
Presence of soap or ash	Yes	32 (28.32)	20 (22.22)	38(29.01)	42(32.81)	0.515
	No	81 (71.68)	70 (77.78)	92(70.23)	86(67.19)	
Separate room for livestock	Yes	60 (30.46)	96 (48.48)	94(47.47)	95(49.48)	0.015*
	No	137 (69.54)	102 (51.52)	97(48.99)	91(47.40)	

Section 4: Child Health and Nutrition

Early initiation of breastfeeding is important for both the mother and the child. The first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the new-born from disease. Early initiation of breastfeeding also encourages bonding between the mother and her new-born and facilitates the production of regular breast milk.

Table 4A shows that 53.37% and 56.40% of the participants in the control and intervention groups during the endline survey reported that the mother squeezed out and threw away the first milk

(colostrum). All the children were reported to ever have been breastfed in both groups. During the endline study, 67.19% of infants in the control group and three-quarters (75.44%) from the intervention group reported to be breastfed immediately after birth, with no statistically significant difference in the practice. There was almost about 18 percentage points decrease from the baseline value regarding giving anything other than breast milk before six months. The average age when the mothers given their child something other than breast milk (including water) for both groups was 5 months. The difference across the two groups in terms of feeding a child other than breast milk was not significant as comparable proportion, 93.75% of children from the control and 93.57% from the intervention group.

Table 4: Early Initiation of Breastfeeding for Youngest Child

Variable		Baseline		Endline		p-value
		Control	Intervention	Control	Intervention	
Throw away the first milk	Yes	78 (55.32)	64 (45.39)	103(53.37)	97(56.40)	0.474
	No	63 (44.68)	77 (54.61)	90(46.63)	74(43.02)	
Child ever breastfed	Yes	142(100.0)	141 (100.0)	192(99.48)	171(99.42)	-
	No	-	-	-	-	
Initiation of breastfeeding	Immediately	96 (69.06)	98 (70.00)	129(67.19)	129(75.44)	0.118
	1 to 24 Hrs	37 (26.62)	29 (20.71)	51(26.56)	38(22.22)	
	24+ Hrs	6 (4.32)	13 (9.29)	11(5.73)	4(2.34)	
Ever taken anything other than breast milk In the past six months	Yes	86 (60)	82(58)	81 (42)	68 (39.7)	0.130
	No	56 (40)	59(42)	111 (58)	103 (60.3)	
Age in months at which the mother first gives food OR drink (even water) other than breastmilk (Mean (\pm SD)		4.95(\pm 2.00)	4.64(\pm 2.18)	5.14(\pm 1.69)	5.16(\pm 1.79)	-

The study findings indicate that about 32% and 38% of children in the control and intervention groups during the endline survey had an appropriate minimum dietary diversity. Comparably, roughly 27% of the children from both groups had the minimum acceptable diet during the endline. Significant statistical differences were identified in terms of bottle-feeding rates and feeding of solid or semi-solid foods among children in the control and intervention groups. There was also a significant difference between the control and intervention groups in the number of meals the mothers reported to eat while

pregnant, with over 50% of both groups reporting eating “more” when they are breastfeeding at endline. Maternal dietary diversity was also assessed in the study and even though there was an increase in the proportion of women consuming diversified diet increased by about 16% during the endline, the difference between the two groups was not statistically significant.

Table 5: Additional indicators for assessing infant and young child feeding practices for youngest child

Variable		Baseline		Endline		p-value
		Control	Interventio n	Control	Interventio n	
Timely initiation of Solid, semi-solid or soft foods	Yes	77(89.5)	72 (94.7)	169(92.8)	154(97.50)	0.042 *
	No	9 (10.5)	4 (5.3)	13 (11.54)	4(2.50)	
Minimum dietary diversity	Low	88(89.80)	79 (87.78)	125(68.68)	100(62.50)	0.243
	Appropriate	10(10.20)	11 (12.22)	57(31.32)	60(37.50)	
Minimum meal frequency	Yes	47(47.96)	39 (43.33)	148(88.10)	131(83.97)	0.288
	No	51(52.04)	51 (56.67)	20(11.90)	25(16.03)	
Minimum acceptable diet	Yes	6 (6.12)	5 (5.56)	53(26.90)	51(26.84)	0.529
	No	92(93.88)	85 (94.44)	129(65.48)	107(56.32)	
Bottle feeding	Yes	15(17.24)	8 (10.53)	21(11.54)	32(20.00)	0.027 *
	No	72(82.76)	68 (89.47)	161(88.46)	128(80.00)	
Up to what age do you intend to breastfeed in months -mean (SD)		26.3(13.22)	27.2(14.87)	31.9(10.05)	35.4(10.18)	-
While breastfeeding you eat ...	More	35 (40.70)	32 (42.67)	102(56.04)	93(58.13)	0.030 *
	Same	40 (46.51)	38 (50.67)	61(33.52)	62(38.75)	
	Less	11 (12.79)	5 (6.67)	19(10.44)	5(3.13)	
Minimum Dietary Diversity for women	Low (<5)	158 (77.07)	160 (78.05)	136 (69.0)	118 (62.1)	0.151
	Appropriate (≥5)	47 (22.93)	45 (21.95)	61 (31.0)	72 (37.9)	

The pattern of consumption of different foods was also assessed among children from 6-23 months of age. Accordingly, majority of the children from the two groups were fed diets made from grains, roots, tubers, legumes and nuts during the baseline survey (Figure 1). This pattern mostly remained the same during the endline survey but with significant improvements in the consumption of legumes and nuts, dairy, eggs and vitamin A rich fruits and vegetables (Figure 2).

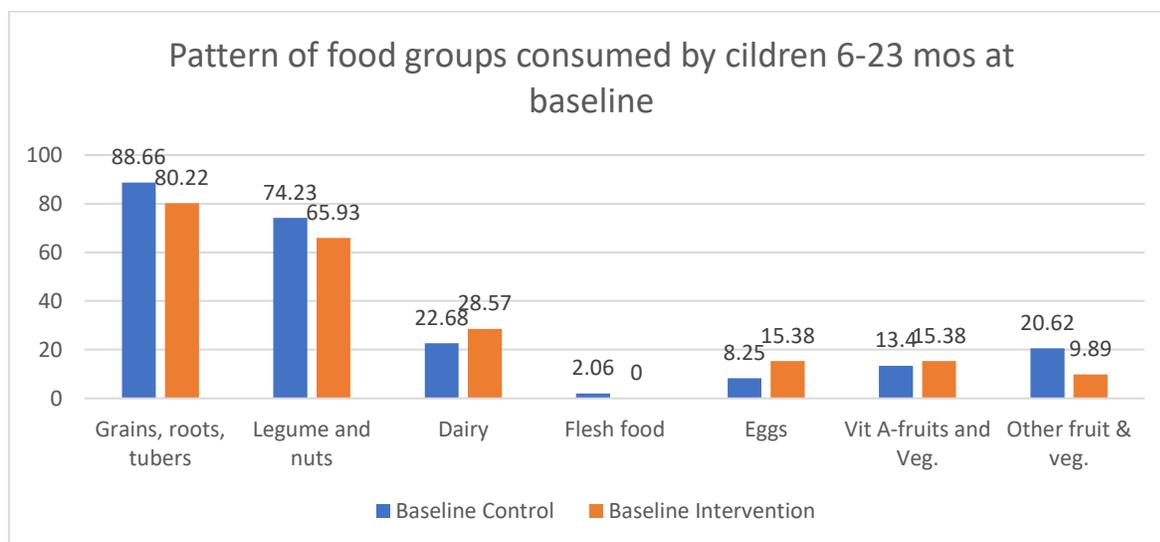


Figure 1: Pattern of food groups consumed by children 6-23 months during the baseline survey

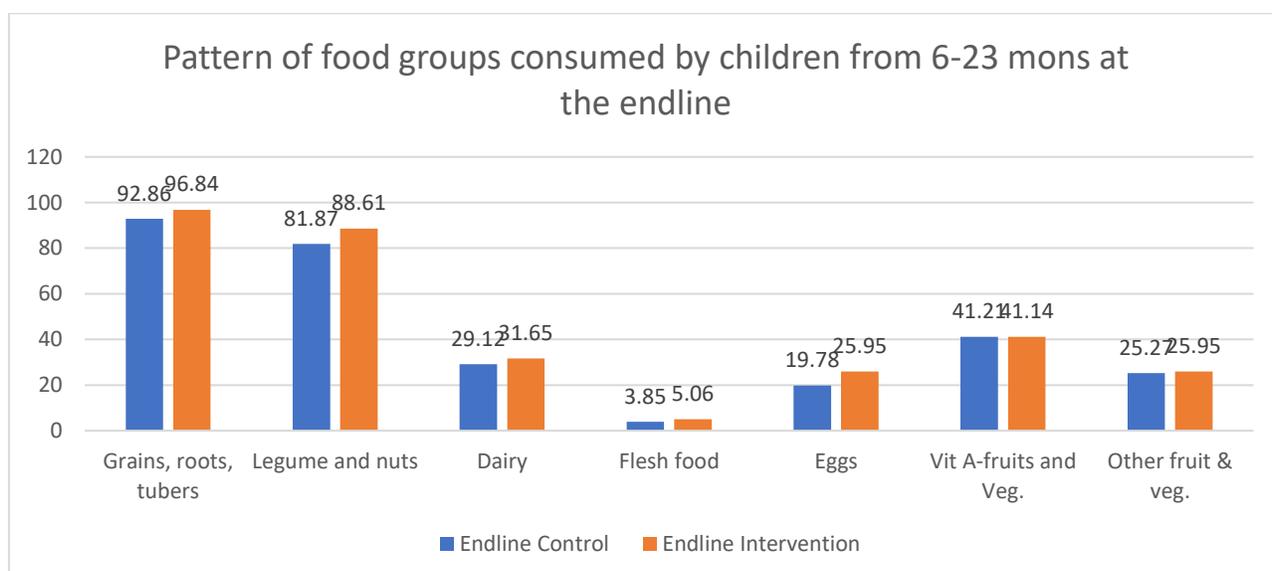


Figure 2: Pattern of food groups consumed by children 6-23 months during the endline survey

Section 5: Couple Relationship and Gender Perspectives

There are three dimensions of couple relationships and gender perspectives explored in the survey, namely related to decision-making, assets and resources, and time allocation. Most of the participants, both in the control and intervention groups, reported making decisions about purchases for daily household needs, major household purchases, types of food to be purchased and consumed jointly with their husbands. Similarly, decisions at household level about use of husband's or wife's income,

responsibility for raising poultry and small animals, and chicken coop maintenance, most of the study participants indicated that it was a joint decision in both the control and intervention groups. The difference in who uses agricultural products and who decides to use these products were found to be statistically significant among the two groups during the endline survey with much higher proportion of participants in the intervention group reporting joint use and decision making. Similarly, during the endline, there is about a 10% higher report of working adequate hours in a day among the intervention group with a significant difference in the time allocation compared to the control group. The time allocation also has much improved in both groups from what was exhibited during the baseline survey (Table 6).

The productive and domestic workload data was derived from a detailed 24-hour time allocation module in which respondents were asked to recall the time spent on primary activities in the day prior to the interview. The number of hours worked was defined as the sum of the time the individual reported spending on work-related tasks as the primary activity. The definition of work-related tasks includes wage and salary employment, own business work, farming, construction, shopping/getting service, fishing, weaving/sewing, textile care, cooking, domestic work, caring for children/adults/elderly, commuting, and traveling. The individual was defined as adequate on workload if the number of hours he or she worked per day was less than the time poverty line of 10.5 hours in the previous 24 hours [7].

Table 6: Couple relationship and gender characteristics among participants

Variables		Baseline		Endline		P-value
		Control	Intervention	Control	Intervention	
Decision making						
decisions about purchases for daily household needs most of the time?	Self	126(61.46)	113 (55.67)	93(46.97)	82(42.71)	0.813
	Spouse/partner	9 (4.39)	9 (4.43)	3(1.52)	5(2.60)	
	jointly	65 (31.71)	76 (37.44)	98(49.49)	101(52.60)	
	Someone else	5 (2.44)	5 (2.46)	4(2.02)	4(2.08)	
decisions about major household purchases most of the time?	Self	34 (16.59)	24 (11.88)	30(15.15)	38(19.79)	0.460
	Spouse/partner	39 (19.02)	51 (25.25)	36(18.18)	26(13.54)	
	jointly	127(61.95)	122 (60.40)	126(63.64)	123(64.06)	
	Someone else	5 (2.44)	5 (2.48)	6(3.03)	5(2.60)	
decisions on type of food to	Self	117(57.07)	101 (49.75)	89(44.95)	75(39.06)	0.146
	Spouse/partner	10 (4.88)	15 (7.39)	4(2.02)	12(6.25)	

purchase most of the time?	jointly	72 (35.12)	82 (40.39)	101(51.01)	100(52.08)	
	Someone else	6 (2.93)	5 (2.46)	4(2.02)	5(2.60)	
decisions on the type of food consumed most of the time?	Self	124(60.49)	109 (53.69)	92(46.46)	85(44.27)	0.665
	Spouse/partner	14 (6.83)	10 (4.93)	5(2.53)	9(4.69)	
	jointly	62 (30.24)	80 (39.41)	97(48.99)	93(48.44)	
	Someone else	5 (2.44)	4 (1.97)	4(2.02)	5(2.60)	
Who gets to decide on husband's income most of the time'?	Self	7 (4.24)	10 (5.13)	9(4.55)	2(1.04)	0.077
	Spouse/partner	57 (34.55)	73 (37.44)	54(27.27)	39(20.31)	
	jointly	100(60.61)	111 (56.92)	129(65.15)	142(73.96)	
	Someone else	1 (0.61)	1 (0.51)	3(1.52)	2(1.04)	
Who gets to decide on wife's income most of the time?	Self	77 (50.99)	64 (35.16)	58(29.29)	42(21.88)	0.079
	Spouse/partner	7 (4.64)	13 (7.14)	8(4.04)	4(2.08)	
	jointly	66 (43.71)	104 (57.14)	115(58.08)	136(70.83)	
	Someone else	1 (0.66)	1 (0.55)	3(1.52)	1(0.52)	
Who is responsible for raising poultry, small animals in most of the time?	Self	57 (32.76)	69 (37.50)	47(23.74)	32(16.67)	0.081
	Spouse/partner	16 (9.20)	11 (5.98)	17(8.59)	8(4.17)	
	jointly	92 (52.87)	103 (55.98)	122(61.62)	141(73.44)	
	Someone else	9 (5.17)	1 (0.54)	3(1.52)	5(2.60)	
decisions for doing chicken coop at household?	Self	22 (14.77)	40 (23.95)	36(18.18)	26(13.54)	0.258
	Spouse/partner	50 (33.56)	43 (25.75)	20(10.10)	16(8.33)	
	jointly	67 (44.97)	83 (49.70)	111(56.06)	130(67.71)	
	Someone else	10 (6.71)	1 (0.60)	5(2.53)	5(2.60)	
Assets and resources						
Who in your household get to use the animals	Self	7 (3.72)	13 (6.74)	10(5.05)	5(2.60)	0.245
	Spouse/partner	47 (25.00)	35 (18.13)	40(20.20)	27(14.06)	
	jointly	128(68.09)	140 (72.54)	136(68.69)	149(77.60)	
	Someone else	6 (3.19)	5 (2.59)	4(2.02)	5(2.60)	
Who gets to decide who and how the animals are used?	Self	5 (2.66)	6 (3.08)	10(5.05)	3(1.56)	0.081
	Spouse/partner	48 (25.53)	40 (20.51)	43(21.72)	28(14.58)	
	jointly	130(69.15)	144 (73.85)	134(67.68)	150(78.13)	
	Someone else	5 (2.66)	5 (2.56)	4(2.02)	5(2.60)	
Who gets to use the agricultural produces	Self	10 (4.93)	14 (7.22)	14(7.07)	5(2.60)	0.016*
	Spouse/partner	51 (25.12)	41 (21.13)	45(22.73)	25(13.02)	
	jointly	135(66.50)	135 (69.59)	134(67.68)	154(80.21)	
	Someone else	7 (3.45)	4 (2.06)	4(2.02)	5(2.60)	
Who gets to decide who and how agricultural	Self	8 (3.96)	13 (6.70)	12(6.06)	118(59.60)	0.003*
	Spouse/partner	58 (28.71)	57 (29.38)	63(31.82)	4(2.02)	
	jointly	131(64.85)	120 (61.86)	8(4.17)	145(75.52)	
	Someone else	5 (2.48)	4 (2.06)	31(16.15)	5(2.60)	

products are used?						
Who gets to use the agricultural tools in a regular basis?	Self	10 (5.00)	7 (3.65)	16(8.08)	15(7.81)	0.201
	Spouse/partner	149(74.50)	134 (69.79)	118(59.60)	98(51.04)	
	jointly	34 (17.00)	48 (25.00)	58(29.29)	69(35.940)	
	Someone else	7 (3.50)	3 (1.56)	5(2.53)	5(2.60)	
Who gets to decide who and how the agricultural tools are used?	Self	10 (5.00)	7 (3.65)	15(7.58)	13(6.77)	0.208
	Spouse/partner	142(71.00)	126 (65.63)	118(59.60)	99(51.56)	
	jointly	43 (21.50)	56 (29.17)	58(29.29)	69(35.94)	
	Someone else	5 (2.50)	3 (1.56)	6(3.03)	6(3.13)	
Does your workload in the household decrease during pregnancy?	Yes	96 (46.83)	91 (44.39)	110(55.56)	119(61.98)	0.294
	No - Stays the same	102(49.76)	97 (47.32)	81(40.91)	69(35.94)	
	No - increases	7 (3.41)	17 (8.29)	7(3.54)	3(1.56)	
Time Allocation						
Workload	Adequate/works less than 10.5 hours a day	93 (45.37)	97 (47.32)	114 (57.8)	130 (68.4)	0.031*
	Inadequate/works more than 10.5 hours a day	112 (54.63)	108 (52.68)	83 (42.2)	60 (31.6)	

Section 6: Gender Equitable Men Index

Comparable proportion of participants in both the control and intervention groups agreed that changing diapers, giving kids a bath and feeding kids are mother's responsibility (86% and 85% respectively), and woman's most important role is to take care of her home and cook (84% in both groups). Additionally, 51% women in the control and intervention groups indicated that a man should have the final word about decisions in his home. Even though the difference among the two groups is not statistically significant, the percentages are less at endline than baseline (Table 7).

Table 7: Gender equitable men index characteristics of participants

Variable		Baseline		Endline		p-value
		Control	intervention	Control	Intervention	
Changing diapers, giving kids a bath & feeding kids are mother's responsibility	Agree	190(92.68)	184 (89.76)	170(85.86)	163(84.90)	0.523
	Partially Agree	5 (2.44)	10 (4.88)	13(6.57)	14(7.29)	
	Disagree	10 (4.88)	11 (5.37)	13(6.57)	15(7.81)	

Woman's most important role is to take care of her home & cook	Agree	188(91.71)	186 (90.73)	165(83.33)	160(83.33)	0.090
	Partially Agree	10 (4.88)	5 (2.44)	25(12.63)	16(8.33)	
	Disagree	7 (3.41)	14 (6.83)	7(3.54)	16(8.33)	
A man should have the final word about decisions in his home	Agree	137(66.83)	134 (65.37)	101(51.01)	99(51.56)	0.235
	Partially Agree	37 (18.05)	21 (10.24)	39(19.70)	26(13.54)	
	Disagree	31 (15.12)	50 (24.39)	53(26.77)	64(33.33)	

Section 7: Spousal communication & approval about diet diversity

During the endline survey, most of the respondents reported discussing nutrition and nutrition related ideas and diversified diet with their husband or partner in both groups. Regarding initiation of discussion, 80% of the women in both groups reported that they start the conversation themselves. On the other hand, a statistically significant difference was observed in terms of intending to discuss with their husbands about nutrition. To this end, 75% of women in the control and 85% in the intervention groups during the endline reported to have the intention of discussing about nutrition with their husbands. Significant majority of the women in both groups also didn't seek approval from their husbands or any other person for consumption of diversified diet (Table 8).

Table 8: Spousal communication & approval about diet diversity and nutrition related among participants

Variables		Baseline		Endline		p-value
		Control	Intervention	Control	Intervention	
Discussed about nutrition with your husband	Yes	114(57.29)	122 (62.24)	136(68.69)	150(78.13)	0.022
	No	85 (42.71)	74 (37.76)	56(28.28)	35(18.23)	
Who usually starts the discussion?	Self	93 (83.04)	94 (78.33)	108(79.41)	120(80.00)	0.161
	Spouse	16 (14.29)	26 (21.67)	27(19.85)	25(16.67)	
Intended on talking to spouse about nutrition	Yes	134(68.72)	161 (82.14)	148(74.75)	164(85.42)	0.006*
	No	61 (31.28)	35 (17.86)	42(21.21)	21(10.94)	
Who decides to consume a diversified diet in the household?	Self	138(74.19)	115 (57.79)	124(62.63)	118(61.46)	-
	Spouse	22 (11.83)	10 (5.03)	17(8.59)	10(5.21)	
	Jointly	40 (21.51)	84 (42.21)	81(40.91)	78(40.63)	
	Someone	6 (3.23)	6 (3.02)	4(2.02)	12(6.25)	
	Yes	62 (31.96)	73 (37.63)	56(28.28)	52(27.08)	0.742

Do you seek approval about consumption of diversified diet with your husband?	No	132(68.04)	121 (62.37)	133(67.17)	134(69.79)	
Do you seek approval about consumption of diversified diet from anyone other than your partner?	Yes	12 (6.03)	13 (6.60)	3(1.52)	3(1.56)	0.142
	No	187(93.97)	184 (93.40)	191(96.46)	189(98.44)	

Section 8: Results of the difference in difference analysis

Difference in differences analysis was performed using a generalized linear mixed model to identify the effect of the intervention on the main outcome indicators from the baseline to the endline by controlling for sociodemographic characteristics of participants (age and educational status) and clustering effect at kebele level. Accordingly, child minimum dietary diversity, minimum meal frequency, minimum acceptable diet, women diet diversity, antenatal care follow up, iron folic acid intake, having a hand washing facility at home, what participants use to wash their hands with, having a separate space for livestock, women decision making power, their workload and communication with their spouses were the outcomes considered at this preliminary analysis. The variables regarding women decision making power on various issues and communication with their spouses were dichotomized while conducting the difference in difference analysis. The coefficients of all the indicators were determined from the interaction between the grouping variable (if the participant is either in the control or intervention group) and time (if the data is from baseline or endline). For ease of interpretation the coefficients and their respective confidence intervals were changed into percentages. They represent how much percent of the change from the baseline to the endline were due to the intervention effect. For the outcomes such as having handwashing facility in the household (14.3%), washing hands with water and soap/ash (9.7%), having a separate space for livestock (14.5%), duration of IFA intake (13.6%) and women decision making to use agricultural products (12.3%), the intervention brought a statistically significant different changes from the baseline values.

The intervention has brought about large improvements in the other indicators also, even though the changes were not statistically significant. Accordingly, child minimum diet diversity, minimum acceptable diet and women diet diversity have improved by 20%, 18% and 7.9% from their baseline values respectively. Similarly, there were improvements in joint decision making on husbands' income (3.6%), responsibility on to raise small animals (6.1%), using the animals (3%) and decreased workload (8.4%) due to the intervention. Regarding women communication with their spouses, the study identified that there were 5.2% and 5.7% increments in women discussing about nutrition with their husbands and self-initiating the discussion respectively. Compared to the baseline report, seeking approval from husbands or anyone in the household has also decreased by 6.3% due to the intervention (Table 9).

Table 9: Estimates from difference in difference analysis

Outcome	β Coefficient (%)	Robust Stand. error	95% CI	p-value
Minimum dietary diversity (appropriate)	20%	0.17	(-14%, 54%)	0.248
Minimum meal frequency (Yes)	2%	0.14	(-27%, 30%)	0.912
Minimum acceptable diet (Yes)	18%	0.17	(-16%, 53%)	0.295
Women dietary diversity	7.9%	0.06	(-4.5%, 20.3%)	0.213
ANC follow-up (Yes)	1.3%	0.04	(-11%, 9%)	0.812
IFA intake (Yes)	3.4%	0.05	(-7%, 14%)	0.545
Duration of IFA intake (3 months and more)	13.6%	0.08	(-22%, 49%)	0.045*
Hand washing facility (Yes)	14.3%	0.06	(-20%, 48%)	0.038*
Hand washing material (water + soap/ash)	9.7%	0.16	(-32%, 52%)	0.047*
Separate space for livestock (Yes)	14.5%	0.12	(-47%, 17%)	0.036*
Decision to make major purchase (Jointly)	2.5%	0.06	(-11%, 16%)	0.719
Decision on husband's income (Jointly)	3.6%	0.07	(-9.7%, 17%)	0.596
Decision on wife's income (Jointly)	-5.7%	0.07	(-19%, 7.7%)	0.404
Raising small animals (Jointly)	6.1%	0.07	(-7.4%, 19.5%)	0.375
Decision on use of animals (Jointly)	2.8%	0.06	(-10%, 15.6%)	0.668
Decision on use of agri. Products (Jointly)	12.3%	0.06	(-0.4%, 25%)	0.048*
Workload/Time allocation (Yes decreased)	8.4%	0.07	(-5.3%, 22.2%)	0.232
Discussed about nutrition (Yes)	5.2%	0.06	(-7.8%, 18.3%)	0.432
Initiating the discussion (Self)	5.7%	0.07	(-8.3%, 19.7%)	0.424
Need approval for diversified consumption (Yes)	-6.3%	0.06	(-19%, 6.4%)	0.334

Chapter 5: Discussion of key findings

This study covered most of the Growth through Nutrition project activities including nutrition sensitive reproductive health care services, water, sanitation & hygiene, child health & nutrition, mother dietary diversity and child's food group diversity, couple relationship and gender perspectives. To this end, it evaluated the added value of the virtual facilitator tool to the existing ECC program for improving nutritional status of women and children and other important indicators under the Growth through Nutrition Activity. Accordingly, positive changes have been exhibited in maternal health care service utilization, WASH, IYCF practices and women decision-making power and communication.

The study identified that there were improvements in child minimum diet diversity, minimum acceptable diet, women diet diversity from baseline to endline and IFA intake for three months and above. Reviews of effective infant feeding programs also highlight the importance of using a collection of SBCC interventions to encourage changes in individual behaviours as well as social norms [8]. A study to evaluate the effect of exposure to large scale SBCC interventions in two regions in Ethiopia (SNNPR and Tigray) showed that there were large improvements in terms of infant and young child feeding practices attributed to their exposure to SBCC interventions [9]. Evidence from several studies strongly suggests that increasing the number of contacts and using multiple strategies increases the positive effect of SBCC on maternal and child nutritional practices [10]. The body of literature on the effectiveness of SBCC to improve women's dietary practices during pregnancy and lactation is still small, the existing evidence indicates that SBCC approaches can and do succeed in improving uptake of the behaviours promoted to diversify diet [10]. The findings in this study also comply with the evidence of the effect of SBCC on complementary feeding practices which is quite broad and clearly indicate that SBCC interventions can improve a wide range of complementary feeding practices. The major limitation across the body of evidence is that the use of different measures of optimal complementary feeding which is particularly challenging to draw conclusions regarding the effectiveness of particular SBCC approaches. A randomized controlled trial in Bangladesh indicated that SBCC interventions resulted in a sustained positive effect on infant and young child nutrition knowledge among mothers in Bangladesh over time. The study exhibited that SBCC results in improved knowledge of infant and young child nutrition, and this gain in knowledge persists 6–10 months after the intervention ends. Much of the gain in knowledge is achieved in the first 12 months of the intervention [11].

There was also a significant improvement in having hand washing facility in the household, hand washing with water and soap/ash and having separate space for livestock. A recent documentation study conducted in four of the regions targeted by growth through nutrition by the MANOFF Group indicated that, across the regions, all research participants described improved WASH practices as one of the major changes they were observing in their communities. They mentioned hand washing with soap and water being a widely adopted practice in their community. They also indicated most people built and use latrines, keep the compound swept, separating poultry and animals from the household [6].

A study indicated that, there was a strong correlation between the number of communication channels used during SBCC interventions and their knowledge score, with the printed media such as stickers, posters and leaflets associated with significantly higher scores than other channels. However, the same didn't hold true for improvements in actual behaviour and only school children were associated with significantly higher positive changes hence less contamination. The same study in its in-depth interviews noted that although most knew the intervention messages well enough, the importance they attached to them differ markedly [10]. Thus, dissemination of knowledge message was not consistent with the process of dissemination of actual practice. Where a strong sense of community spirit exists, friends, relatives and neighbours will more likely tilt towards positive changes and practices. Therefore, for a favourable impact on WASH practices, SBCC interventions need to be implemented through communities and households and it relies on a multi sectorial approach with a supporting action from various stakeholders. This study identified that there was a positive and significant change from the baseline value in joint decision making on the use of agricultural products. However, women in the intervention group were found to have less decision-making power on their husband's income. A review on the effectiveness of SBCC interventions on various nutrition specific and nutrition sensitive indicators identified that there is limited evidence regarding the effectiveness of SBCC strategies in improving rest and workload during pregnancy. Given the importance of women's dietary practices during pregnancy and lactation, the dearth of evidence is notable [10].

Conclusion

Findings from the descriptive analysis indicated that there are improvements in many of the outcomes assessed among both the control and intervention groups from their baseline values. This indicates that the messages that participants received due to their participation in the ECC sessions have resulted in the positive changes. To this end, we have exhibited improvements in child diet diversity and minimum acceptable diet both in control and intervention groups from the baseline values. There were also improvements in hand washing practices from baseline to endline. ECC sessions need to focus on messaging around washing before eating which remained same for control and decreased for intervention groups. Husband's participation during ANC visits has also improved as the family participates in the ECC program. The proportion of women who exclusively breastfed their children has increased from what has been noted in the baseline, even though there still are significant number of them feeding their infants other than breast milk in the first six months. Similarly, there was a positive change in the consumption of legumes and nuts, dairy, eggs and vitamin A rich fruits and vegetables from the baseline value. The ECC participation has also enabled the participants to make joint household decision making and controlling resources which was changed positively from what was exhibited during the baseline survey before the participants were enrolled in the ECC program. Although we have seen significantly improved women workload in the endline as compared to baseline, the majority of respondent still see as a woman primary role in taking care of child and home. This requires further area of work and increase education around male involvement in child caring practices and helps further decrease women workload

The study findings shed light on the fact that both the intervention and control groups have changed positively from baseline to endline for a range of indicators measured. Given the objective of the study, the amount of change from baseline to follow-up (endline) measurements attributed to the use of virtual facilitator was also determined. Accordingly, 13.6% of the changes in terms of IFA intake for three months and above, 14.3% of the changes in having hand washing facility in the household, 9.7% of the changes in hand washing with water and soap/ash and 14.5% of the changes in having separate space for livestock and 12.3% of joint decision making on the use of agricultural products were attributable to the use of virtual facilitator in the deliberation of the ECC program. All these changes were found to be statistically significant.

The intervention has also brought large improvements in the other indicators, even though the changes were not statistically significant. Accordingly, child minimum diet diversity, minimum acceptable diet and women diet diversity have improved by 20%, 18% and 7.9% from their baseline values respectively. Similarly, there were improvements in joint decision making on husbands' income (3.6%), responsibility on to raise small animals (6.1%), using the animals (3%) and decreased workload (8.4%) due to the intervention. Regarding women communication with their spouses, the study identified that there were 5.2% and 5.7% increments in women discussing about nutrition with their husbands and self-initiating the discussion respectively. Compared to the baseline report, seeking approval from husbands or anyone in the household has also decreased by 6.3% due to the intervention.

As a strength, this study has used a quasi-experimental design with control group and adequately powered sample size to answer the research question. The baseline and endline surveys were also conducted during the same season 10 months apart so that we can control the seasonality effect. We have also applied a robust statistical analysis to identify the added value of the intervention to the changes in the outcome indicators. Nevertheless, the study also has a limitation. Inherent to the design used, an inability to sufficiently control for important confounding variables arises from the lack of randomization which might mask the real effect of the intervention in bringing about desired changes. Even though large changes were reported, some of the estimates for IYCF indicators are found to be less precise as their wide confidence intervals indicated. This is mainly due to the sample differences during baseline and endline measurements, as children who were not eligible (< 6 months old) for assessment of the indicators during the baseline were old enough and measured for the specific indicators during the follow up study. Therefore, it is important to consider these limitations while interpreting the findings. A standard and similar way of transmitting messages is one of the strategies to make the ECC program effective. To this end, differences in the skill of facilitators might create a difference in compliance which might affect the effectiveness of the strategies.

Recommendation

General recommendation

There were notable positive changes from baseline values in most of the indicators measured, both in the control and intervention groups indicating that participation in the ECC program had a positive effect. Albeit the statistical significance, a large to moderate positive changes from baseline values were exhibited among participants in the intervention group regarding most of the outcome indicators.

It is important to consider the magnitude of these changes beyond their statistical significance and examine the practical significance/implication they have to the project. Therefore, it is important to strengthen the use of virtual facilitators as a modality to transmit standard nutrition messages during the ECC programs for a positive change mainly in WASH and IYCF indicators. As the findings showed varying magnitude of changes across the outcomes studied, it is also equally important to tailor the use of virtual facilitators with a focus on the indicators they positively affect more. Continuous monitoring and evaluation of the ECC implementation has also a paramount importance to ensure compliance of intervention administration in order to harness its maximum benefit.

Specific recommendations

- Scaling up the use virtual facilitators as a strategy to deliver SBCC messages with a focus on IYCF and WASH indicators to sustain the observed effect
- The use of multiple SBCC strategies (VF included) need to be strengthened to improve nutrition sensitive health care services and women empowerment
- The descriptive analysis indicates a large proportion of women not exclusive breastfeeding after the interventions. Therefore, the SBCC messages need to design a strategy to improve the level of exclusive breast feeding.
- The SBCC messaging should also give a due emphasis to increase husband's involvement during ANC visits as their increased participation in decision making about the ANC visits
- There are notable changes in hand washing practices. Although it is recommended washing at all critical times, messaging could prioritize most critical times including before eating where there is limited water availability.
- There were disparities regarding handwashing with soap and water reported by respondents and presence of soap/ash at the hand washing site as confirmed by observation. This gap needs to be accounted in future interventions.
- Even though there are positive changes in the women dietary diversity, a large proportion of women still consume less diversified diet. This requires strengthening the intervention to maximize its effect
- There still is unfavorable attitude among the household's studies regarding childcare and other household activities being considered the role of the women only. The interventions should also target in improving these attitudes.

- Strengthen the use of multiple SBCC strategies in sustaining the positive changes in spousal communication about nutrition
- Routine monitoring and evaluation of the proper implementation of the ECC program will have paramount importance to ensure compliance with the standard guides, hence, maximum effect.

Future research areas

Beyond what is exhibited regarding the effect of the SBCC interventions, the research findings indicated that there are some areas which need to be further investigated. Accordingly, it is important to further research on:

- The sustainability of positive changes regarding major IYCF and WASH practices
- Identify SBCC strategies through which we can further improve women empowerment specifically their decision-making power regarding household income
- The cost-benefit analysis before scaling up the use of virtual facilitators in a larger scope as SBCC strategies to improve maternal and child nutrition
- Test the effectiveness of using virtual facilitators while the audio recordings are loaded on participant's personal mobile devices which enables frequent exposure to the messages. Through this, we can learn if the extent of exposure affects behavioral change and practice.

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Annex: Data collection tool

INDIVIDUAL IN-DEPTH QUESTIONNAIRE FOR MOTHERS OF CHILDREN AGED 0-23 MONTHS

Note to interviewers: This questionnaire is to be applied during the baseline (pre-ECC) survey. It is assumed that all respondents during the baseline survey will have never heard of “ECCs” before and will have never seen the SBCC materials.

INTERVIEWER: Please read the introduction below aloud to the respondent to explain the purpose of this research.

Good morning/afternoon. My name is _____ and I work for the Growth through Nutrition project. I would like to talk with you about a first 1,000 days of maternal and child nutrition Enhanced Community Conversations (ECCs) program that will be been running in your community by _____ (CSO), The ECCs will be conducted with groups of mothers, fathers and grandmothers. The project is led at the national level by Save the Children, funded by USAID and in collaboration with the government of Ethiopia.

Today, I would like to discuss with you to take important information before your start to participate in ECC. I want to let you know that I’m not a medical professional, and I am not an expert on what we are going to discuss today. I am a trained interviewer. I want to hear your honest opinions about the topics we will discuss today. There is no right or wrong answer to the questions I’m going to ask. Please just relax and enjoy the discussion. Please keep in mind that your participation in this discussion is completely voluntary. If for any reason you wish to leave the discussion, you may do so at any time.

Before we begin, I’d like to review some important points about today’s discussion. I want to make sure you know about how it will work and your rights.

- You have been invited here to share your views, experiences and opinions.
- Your answers will be confidential, so feel free to say exactly what is on your mind. Your name and your family’s names will not be used in any reporting.
- Your responses will be added to the responses of many other people who will also participate in interviews just like this one.
- There is no right or wrong answers.
- You may excuse yourself from the conversation at any time for any reason.

Do you have any questions? Is it okay to continue with the discussion?

Interviewee Type: please tick in the box (Multiple responses may be possible).

1	Pregnant women	<input type="checkbox"/>	<input type="checkbox"/>
2	Mothers of children aged 0–5 months	<input type="checkbox"/>	<input type="checkbox"/>
3	Mothers of children aged 6–23 months	<input type="checkbox"/>	<input type="checkbox"/>

204. Have you ever attended school?
1. Yes
 2. No
205. What is the highest level of school you attended?
1. No education
 2. Some primary
 3. Completed primary³
 4. Some secondary
 5. Completed secondary⁴
 6. More than secondary
206. What is the highest [GRADE/YEARS] you completed at that level? [Grade/Years] _____
207. What is the highest level of school your husband attended?
1. No education
 2. Some primary
 3. Completed primary⁵
 4. Some secondary
 5. Completed secondary⁶
 6. More than secondary
208. What is the highest [GRADE/YEARS] you husband completed at that level? [Grade/Years]

209. Marital status of the respondents
1. Never Married
 2. Married
 3. Divorced
 4. Widowed
 5. Separated
 6. Others (specify) _____

210. Do you or your husband own/have mobile telephone?

1. Yes
-

³ Completed 8th grade at the primary level

⁴ Completed 4th grade at the secondary level

⁵ Completed 8th grade at the primary level

⁶ Completed 4th grade at the secondary level

2. No

1 PART III: MATERNAL HEALTHCARE

Note: The ante-natal questions should be asked of the mother with regard to the time that she was pregnant with her youngest child and currently pregnant.

301. Did you visit anyone for antenatal care (ANC) during your last pregnancy/birth?

1. Yes
2. No _____ go to Q 303

302. Who did you visit for the ANC follow up?

	Yes	No
1. Physician	1	2
2. Health Officer	1	2
3. Nurse/Midwife	1	2
4. Health Extension Worker	1	2
5. Traditional birth attendant	1	2
6. Other specify _____		

303. How many months pregnant were you when you first received antenatal care for the last pregnancy? months _____ or 98 don't know

304. How many times did you receive antenatal care during this pregnancy?

number of times _____ or 98 don't know

305. Where did you receive antenatal care for this pregnancy?

	Yes	No
a) At home	1	2
b) Government hospital	1	2
c) Government health center	1	2
d) Government Health Post	1	2
e) Other private medical center	1	2
f) Other NGOs health facility	1	2

306. Did your husband accompany you for at least one ANC visit in this recent pregnancy?

1. Yes
2. No

307. When you went for ANC visit, did you decided jointly with your husband about the visit?
1. Yes
 2. No-----→ Q309
308. If not, who made the decision?
1. Self
 2. Husband
 3. Other(specify)
309. During your current pregnancy⁷ or at the time when you were pregnant with the youngest child, did you take any tablet that was round and of brown color (Iron tablet) given to you by the person you went to see? (please demonstrate the tablet)
1. Yes
 2. No -----→ Q311
310. If the answer to Q309 is yes, for how long did you take the tablets?
1. Less than one month
 2. _____number of months completed
 98. Don't know
311. During your antenatal follow up, did the health care provider ask you where you would like to deliver?
1. Yes
 2. No
312. Did the provider advise you to deliver at a health facility?
1. Yes
 2. No
313. Where did you deliver your last child?
- a) At home
 - b) Government hospital
 - c) Government health center
 - d) Government Health Post
 - e) Other private medical center
 - f) Other NGOs health facility
314. Did you visit any health facility within two days after your last delivery for postnatal care?

⁷ Current pregnancy in this study is reported pregnancy by the mother

1. Yes
2. No
88. Don't remember⁸

PART IV: SANITATION & HYGIENE

(The respondent to this part is the mother or care taker of the child)

401. Under what circumstances do you wash your hands? (Do not read the responses below. Allow respondent to answer, and then fill each item below)

1	Not at all	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
2	When dirt is visible	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
3	After toilet use/defecation/urination	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
4	After cleaning child following defecation	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
5	Before preparing the food	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
6	Before serving a meal	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
7	Before eating	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
8	After eating	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
9	Before feeding a child	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
10	After feeding or tending to livestock or poultry	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
11	After tending the fields/crops	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
12	After handling farming equipment	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
13	When I am reminded to do so	<input type="checkbox"/>	1=Yes	<input type="checkbox"/>	2=No
14	Others (Specify) _____	<input type="checkbox"/>		<input type="checkbox"/>	

402. What do you use to wash your hands most of the time?

1. Water only
2. Water and soap
3. Water and ash
4. Others (specify) _____

403. Does the HH have a hand washing facility⁸ at home?

1. Yes
2. No -----→ Q407

⁸ Hand washing facility in this study is a facility made to wash hand at critical times (after visiting latrine, before preparing food, before eating food, after cleansing child bottom, after visiting sick person). It has to have water and soap or ash to remove dirty and adhesive material including germs

404. If the response to Q403 is “yes”, what type it is? (please confirm by observation)

1. Tippy tap
2. Water basin with jug
3. An improved hand washing facility with tap
4. Others (specify) _____

405. If the response to Q403 is “yes”, where is it located? (please confirm by observation)

1. In the house corner/food cooking place
2. Near the latrine
3. Others (specify)

406. If the response to Q403 is “yes”, is soap or ash physical presence near the handwashing station?

1. Yes
2. No

407. Does the household have a separate room / human living quarters with any livestock, herds, other farm animals, or poultry?

1. Yes
2. No

408. Does the household clean and remove animal feces from human living areas, especially where infants and young children rest/play?

1. Yes
2. No

Part V: Child health

Note: before proceeding check how many children 0-23 months the mother has and what are their ages (in months) (Use Ethiopian calendar for the date)

	Child Identifying Data	Youngest child code (01)	Younger child code (02)	The next younger child code (03)
		NAME: _____	NAME: _____	NAME: _____
50 1	Child ID	_ _ _/ _/ _ _ _ _ Woreda code Round HH code child code	_ _ _/ _/ _ _ _ _ Woreda code Round HH code child code	_ _ _/ _/ _ _ _ _ Woreda code Round HH code child code
50 2	Age in months	_____	_____	_____
50 3	Sex	1. Male 2. Female	2. Male 2. Female	3. Male 2. Female

Part VI_A: Early initiation of breast feeding

Note: The next set of questions should be asked of the mother with regard to all her children aged 0– 23 months old

		Youngest child code (01)	Younger child code (02)	The next younger child code (03)
601	Have you ever breastfed [NAME OF CHILD]?	1. YES 2. No -----→Q603	1. YES 2. No ----- →Q603	1. YES 2. No ----- →Q603
602	If the answer to Q601 is YES, how long after birth did you first put [NAME OF CHILD] to the breast?	0. Immediately (<1 hour) 1. _ _ hours (greater than one hour and less than 24 Hs) 2. _ _ days (24+ hours)	0. Immediately (<1 hour) 1. _ _ hours (greater than one hour and less than 24 Hs) 2. _ _ days (24+ hours)	0. Immediately (<1 hour) 1. _ _ hours (greater than one hour and less than 24 Hs) _ _ days (24+ hours)
603	Has *NAME OF CHILD+ ever taken anything other than breast milk including water given to the child?	1. YES 2. No -----→Q605	1. YES 2. No ----- →Q605	1. YES 2. No -----→ Q605
604	If YES, at what age (months) did you first give (*NAME OF CHILD+) food OR drink (even	_ _ months	_ _ months	_ _ months

	water) other than breast milk?		
--	--------------------------------	--	--

Part VI_B: Exclusive Breast Feeding (EBF)

Note: Consider Infants 0–5 months⁵ of age and inform the mother that you would like to ask about breastfeeding and others since this time yesterday

605	Has the child ever been breastfed? (Do not ask again – will populate from 601)		
606	Was the child breastfed since this time yesterday?	1.YES 2.No ----- →Q608	1.Yes 2.No-----→Q608
607	Did the child consume any of the liquids (except ORS, drops, syrups, vitamins, minerals and medicines) since this time yesterday?	1. Yes 2. No	1. Yes 2. No

Part VI_C: Infant and young child feeding (IYCF) module

Note: Consider children 6–23 months of age and inform the mother that you would like to ask about what the child has received since this time yesterday

		Youngest child code (01)	Younger child code (02)	The next younger child code (03)
		NAME:	NAME:	NAME:
608	Next, I would like to ask you about some liquids that (NAME) may have had yesterday during the day or at night. Did (NAME) have any (ITEM FROM LIST)? Read the list of liquids. A. Plain water B. Infant formula such as [insert local examples]? If yes, How many times C. Milk such as tinned, powdered, or fresh animal milk? If yes, How many times D. Juice or juice drinks E. Clear broth? Include only clear water-based broths F. Yogurt?	Yes (1) NO (2) 1.Yes 2 1.Yes 2Times 1.Yes 2Times 1.Yes 2 1.Yes 2Times 1.Yes 2 1.Yes 2	Yes (1) NO (2) 1.Yes 2 2 1.Yes 2Times 1.Yes 2Times 1.Yes 2 2Times 1.Yes 2 2	Yes (1) NO (2) 1.Yes 2 1.Yes 2Times 1.Yes 2Times 1.Yes 2 1.Yes 2Times 1.Yes 2 1.Yes 2

	<p>If yes, How many times G. Thin porridge? H. Any other liquids such as [list other water-based liquids available in the local setting]?</p>	<p>.....Times 1.Yes 2 1.Yes 2</p>	<p>1.Yes 2 1.Yes 2Times 1.Yes 2 1.Yes 2</p>	<p>1.Yes 2</p>
609	Did (NAME) consume/eat any solid and/or semi-solid food, softs foods other than breast milk yesterday?	<p>1. Yes 2. No 98. Don't Know</p>	<p>1. Yes 2. No 98. Don't Know</p>	<p>1. Yes 2. No 98. Don't Know</p>
610	At what age did you first introduce liquids or foods (semi-solid or solid/soft) other than breast milk to the baby?	<p>Months_____ 98. Don't know 97 Not yet started</p>	<p>Months_____ 98. Don't know 97 Not yet started</p>	<p>Months_____ 98. Don't know 97 Not yet started</p>
611	Since this time yesterday, how many times was (*NAME OF CHILD+) fed mashed or pureed food or solid or semi-solid food or soft foods between sunrise yesterday and sunrise today? Note: doesn't include drink!	<p> _ _ times 98. Don't know</p>	<p> _ _ times 98. Don't know</p>	<p> _ _ times 98. Don't know</p>
612	Did you squeeze out and throw away the first milk (colostrum)?	<p>1. Yes 2. No</p>	<p>1. Yes 2. No</p>	<p>1. Yes 2. No</p>
613	<p>Yesterday during the day or at night, did the child consume breast milk from you or another woman? <i>(Sometimes babies are fed breast milk in different ways. Check if the baby breastfed by another woman, or given breast milk from another woman by spoon, cup or bottle or some other way). This can happen if a mother cannot breastfeed her own baby.</i> Did (NAME) consume breast milk in any of these ways yesterday during the day or at night?</p>	<p>1. Yes 2. No 98. Don't Know</p>	<p>1. Yes 2. No 98. Don't Know</p>	<p>1. Yes 2. No 98. Don't Know</p>

614	If yes, how many times did you breastfeed [NAME], between sunrise yesterday and sunrise today? If response is not numeric, probe for a numeric response	Number _____ 98. Don't Know	Number _____ 98. Don't Know	Number _____ 98. Don't Know
615	Did (Name) drink / eat anything other than breast milk yesterday? OR Is (Name) currently taking other foods or drinks other than breast milk?	1. Yes 2. No 98. Don't Know	1. Yes 2. No 98. Don't Know	1. Yes 2. No 98. Don't Know
616	(If Yes), at what age did you start giving (Name) other foods and drinks in Days?	_____ Age in months	_____ Age in months	_____ Age in months
617	Did [NAME] drink anything from a bottle between sunrise yesterday and sunrise today?	1. Yes 2. No 98. Don't Know	1. Yes 2. No 98. Don't Know	1. Yes 2. No 98. Don't Know
618	Are you still breastfeeding [NAME]?	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
619	Up to what age do you intend to breastfeed [NAME]?	Months _____ 98. Don't Know	Months _____ 98. Don't Know	Months _____ 98. Don't Know
620	Since you breastfeed, are the 'number of meals' you eat more than usual, the same as usual, or less than usual?	1. More 2. Same 3. Less 98. Don't Know	1. More 2. Same 3. Less 98. Don't Know	1. More 2. Same 3. Less 98. Don't Know

s 5 months means 5 completed months and 29 days

Part VII: Mother Dietary Diversity and Child's Food Group Diversity

Note: Ask mother about her and her children 6-23 months: Since this time yesterday how many times have you eaten / taken any of the following things to eat or drink?

		Mother	Youngest child code	Youngest child code	Youngest child code
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			(01)	(02)	(03)
			NAME:	NAME:	NAME:
701	Plain water?	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
702	Tinned, powdered, (NIDO, Ancher) infant formula such as [Nan, S26], or cow milk (excluding breast milk)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
703	Sweetened or flavoured water, 'soda' drink, tea or infusion, soup, coffee, broth (merek) or homemade beer, honey wine	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
704	Any food made from grain such as millet (dagusa), wheat, barley (gebs), sorghum(mashela), rice (ruz), teff, maize (bekolo)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
705	Any food made from fruits or vegetables that have yellow or orange flesh such as carrots, pumpkin (duba), orange sweet potatoes (birtukanama sequear denich), ripe mangoes, papaya, beles.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
706	Any dark green leafy vegetables, spinach, gomen (collard greens), lettuce (selata), costa (chard), shiferaw, cabbage (tekel gomen)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
707	Any food made from roots or tubers such as white potatoes, white sweet potato (sequear denich), onions, beets (key sir), kocho (false banana)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
708	Any food made from lentils, beans (bakela), guaya, peas (ater), chickpea (shimbera), nuts (lewz), or seeds sesame (selyit)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
709	Any other fruits or vegetables (eggplant (bederjan), tomatoes, peppers (karia), zucchini, fosoliya, avocado, lemon (lomi), green mango, banana (muz)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
710	Liver (gubet), kidney (kulalit), heart (lib), or other organ meats.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
711	Any meat such as beef (bere), mutton (beg), goat (fiyel), chicken (doro), or jigra, koq.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No

712	Fresh or dried fish (asa), or seafood.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
713	Cheese (ayib), yoghurt (ergo), arera, aguat or other milk products.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
714	Eggs.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
715	Sugary foods such as sweets (tafach), candies (keremela), chocolate, cakes, and biscuits.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
716	Any food made with oil, fat, butter, or ghee.	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No

Part VIII: Couple relationship and Gender

	Statements	Self	Spouse/partner	Self and spouse jointly	Someone else
Decision Making					
801	Who makes decisions about making purchases for daily household needs most of the time?				
802	Who makes decisions about making major household purchases most of the time?				
803	Who makes decisions on what type of food to purchase most of the time?				
804	Who makes decisions on the type of food consumed most of the time?				
805	Who gets to decide on husband's income most of the time'?				
806	Who gets to decide on wife's income most of the time?				
807	Who is responsible for raising poultry, small animals in most of the time?				
808	Who makes decisions for doing chicken coop at household?				
Assets and Resources					
809	Who in your household get to use the animals (cattle, sheep and goat) in a regular basis?				
810	Who in your household get to decide who and how the animals are used? (this include decision to sell, to consume or transfer the animals)				

811	Who in your household get to use the agricultural produces (food crops and cash crops) in a regular basis?				
812	Who in your household get to decide who and how agricultural products are used?				
813	Who in your household get to use the agricultural tools in a regular basis?				
814	Who in your household get to decide who and how the agricultural tools are used?				

		Time use
815	Does your workload in the household decrease during pregnancy? (do you have extra help?)	1. Yes . 2. No – Stays the same 3. No – Increases 4. Don't know

Time Allocation

Enumerator: Please record a log of the activities for the individual in the last complete 24 hours (starting yesterday morning at 4 am, finishing 3:59 am of the current day). The time intervals are marked in 15 min intervals and one to two activities can be marked for each time period by drawing a line through that activity. If two activities are marked, they should be distinguished with a P for the primary activity and S for the secondary activity written next to the lines. Please administer using the protocol in the enumeration manual.

Time interval	Coding
6-7 AM	
7-8 AM	
8-9 AM	
9-10 AM	
10-11 AM	
11-12 AM	
12-1 PM	
1-2 PM	
2-3 PM	
3-4 PM	
4-5 PM	
5-6 PM	
6-7 PM	
7-8 PM	
8-9 PM	
9-10 PM	
10-11 PM	
11-12 PM	
12-1 AM	
1-2 AM	

2-3 AM	
3-4 AM	
4-5 AM	
5-6 AM	

Coding category

1. Sleeping and resting
2. Eating and drinking
3. Personal care
4. School (also homework)
5. Work as employed
6. Own business work
7. Farming/livestock/fishing
8. Shopping/getting service (including health services)
9. Weaving, sewing, textile care
10. Cooking
11. Domestic work (including fetching wood and water)
12. Care for children/adults/elderly
13. Travelling and commuting
14. Watching TV/listening to radio/reading
15. Exercising
16. Social activities and hobbies
17. Religious activities
18. Other, specify ...

Part IX: Gender Equitable Men Index

901	Changing diapers, giving kids a bath & feeding kids are mother's responsibility	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Somewhat Agree 4. Do Not Agree 	
902	Woman's most important role is to take care of her home & cook	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Somewhat Agree 4. Do Not Agree 	
903	A man should have the final word about decisions in his home	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Somewhat Agree 4. Do Not Agree 	

Part X: Spousal communication & approval about diet diversity and nutrition related

No	Question	Responses	Skip
1001	Have you ever discussed about nutrition and nutrition related idea/diversified diet with your husband /partner	1.yes 2.No (if No skip _____) 3.Do not remember	Q1004 →
1002	If your response to Q1001 is yes, how frequent in the last 3 months	1.None 2.Once 3.Twice 4.three times 5.More than three times	
1003	Who usually start the discussion about nutrition and nutrition related idea/diversified diet at home?	1. Self 2.Spouse 98. Do not know	
1004	Intended on talking to spouse about nutrition and nutrition related idea/diversified diet at home?	1. Yes (If yes skip _____) 2. No (If No skip _____) 98. Do not know	Q1006 → Q1005 →
1005	Reasons for not intending to talk	1.Because spouse does not like it 2.Because it is too embarrassing 3. Because I make the decision 4.others (specify)_____	
1006	Have you discussed about nutrition and nutrition related idea/diversified diet with any of friends, neighbors or relative in the past 3 months?	1.Yes 2.No 3.Do not remember	
1007	Who decides to consume a diversified diet in the household?	1.Self 2.Spouse 3.Jointly 98.Do not know	
1008	Besides you or your spouse, who makes the decision whether you (your spouse) consume a diversified diet or not? (more than one answer possible)	1. Father 2.Mother 3.Father-in-law 4.Mother-in-law 5. Health worker 6.Others (specify)_____	
1009	Do you seek approval about consumption of diversified diet with your husband/partner?	1.yes 2.No 3.others (specify)___	

